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An Analysis of Demographic and Socio-Economic Change in the Clark Fork Watershed Between 2000 and 2010

Benjamin C. Brewer
The University of Montana

AN ANALYSIS OF DEMOGRAPHIC AND SOCIO-ECONOMIC CHANGE IN THE CLARK FORK WATERSHED BETWEEN 2000 AND 2010

By

BENJAMIN CHARLES BREWER

B.A. Political Science, University of California at Santa Cruz, 2002

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Approved by:

J.B. Alexander Ross, Associate Dean
Graduate School

Dr. Christiane von Reichert, Chair
Geography

Dr. Sarah Halvorson
Geography

Dr. Thomas Foor
Anthropology

Dr. Chris Brick
Honorary Member

ABSTRACT

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Chairperson: Dr. Christiane von Reichert

Over the past several decades, noticeable socio-economic changes have occurred in the Rocky Mountain region of the United States, most notably with regard to rapid population growth and concurrent land development. Scholars find this to be characteristic of a transition from the Old West of resource production and extraction to a New West of landscape consumption. This thesis uses indicators of socio-economic changes associated with the New West such as rapid population growth caused by amenity migration to examine changes in the Clark Fork watershed between 2000 and 2010. Using census and economic data, several categories of demographic, economic, and social measures are taken into account including population, housing, employment, and income. Various indicators are considered within each of these categories, and the findings are regarded within the process of transformation in the New West. Data is presented at different scales, from the watershed and individual sub-basin scales, to counties, census tracts, and census blocks. The findings indicate that changes associated with the New West continued to occur in the decade between 2000 and 2010, but at a slower pace and in an increasingly spatially concentrated manner. It is assumed that the recent recession, beginning in 2008, played some role in the socio-economic changes seen by the end of the decade, but due to the nature of census data, it is difficult to determine to what extent. This analysis suggests that dynamics associated with the New West did occur in the watershed over the past decade, though often unevenly. Different sub-regions of the watershed appear to be at different stages of transitioning towards the New West, and some areas, both at the sub-basin and at finer scales, are farther along in this transition than others. The findings suggest that especially those areas that are more mature in their transition towards the New West saw increased spatial and social polarization during the past decade, most likely precipitated by the decline in prosperity attributed to the recession.

Key Words: New West, Clark Fork Watershed, socio-economic demographics, census

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Table of Contents

LIST OF FIGURES

LIST OF MAPS:

LIST OF TABLES

"…our towns flourish when our rivers and streams are healthy, and our rivers and streams are healthy when our towns are flourishing."
-From the Clark Fork Coalition
State of the Clark Fork River Report, 2005

INTRODUCTION

In the past several decades the Western United States, especially the Rocky Mountain region, has experienced increased growth and development. In some areas this growth has been unprecedented. In contrast, other areas of this region have experienced, and continue to suffer, accelerated depopulation and out migration. Due to the sweeping demographic changes that cause and are affected by these general population trends, this dynamic has garnered increased attention which has led to an analysis that frames these changes as a transition from an Old West to a New West (Travis, 2007). These analyses identify specific areas in the Rocky Mountain region which have seen the vast majority of the population growth over the past several decades, and link the concomitant impacts of this growth to various push and pull factors which have enabled these specific localities to attract such rapid growth and development.

The Clark Fork watershed, which incorporates a majority of western Montana, is located within the region experiencing these dynamics. Specifically, a *State of the Clark Fork River Report* (hereinafter termed the *State of the River Report*) put out by the Clark Fork Coalition, a watershed non-profit dedicated to protecting and restoring the Clark Fork basin, found that many of the kinds of demographic changes associated with the New West had occurred to a significant extent within the basin over the past several decades (Clark Fork Coalition, 2005; Swanson, 2006). The report was released in 2005 and looked at social and ecological changes in the basin between 1990 and 2000, compared to the several prior decades. The socio-economic segment of the report included a number of demographic categories, such as population, housing,

employment, and income characteristics. All of these categories used a set of indicators to capture the social makeup of the population living in the watershed. The rationale for this thesis comes from the need to update the Clark Fork Coalition's *State of the River Report* (2005).

The purpose of this project is to identify changes in the population of the Clark Fork watershed by using meaningful socio-economic and demographic indicators as a way of analyzing demographic trends and patterns. This will assist in gauging various effects on the area of the watershed, specifically whether past regional and local patterns and trends have remained consistent or not through the most recent decade, especially those associated with the New West. The primary research question is the following: what are the patterns and trends of socio-economic change in the Clark Fork River watershed area in the decade between 2000 and 2010? The answer to this question can be used to understand changes within the region during this timeframe. Findings from this research will provide a comprehensive demographic and socio-economic portrait of the decade leading up to 2010, which can be used as a platform for understanding patterns and trends that will continue to occur over the coming years.

The *State of the River Report* (Clark Fork Coalition, 2005) set out to capture a broad snapshot of the state of the watershed and the trends occurring within it at the turn of the century. The decade since then has seen a variety of events occur that have had national and local impacts. On a national scale, the decade began with a period of growth and economic robustness, owing to a rebound in the technology sphere after a short recession in 2001. However, the country also has seen a decade of extreme political polarization, caused in part by a series of ongoing wars precipitated by the attacks of 11 September 2001. This polarization has only been made more apparent by the advent of the "great recession" (Rampell, 2009) caused in part by lack of regulation in the subprime mortgage industry. The recession has contributed to

negative impacts throughout the country, and is assumed to be the primary reason that the findings of this project may show differences from the patterns and trends found in the *State of the River Report*.

Locally, up until the recession the region was dealing with the impacts of a booming economy, namely by attempting to spur on and also control increased development. This was especially evident with regard to attempts in regulating land use and development, such as rural subdivisions, leading in one instance to the establishment and then repeal of a county growth policy in Ravalli County over the period of only several years. Other major events with regard to the watershed were the removal of Milltown dam outside of Missoula, which included a major superfund site remediation, and trans-boundary negotiations over the fate of the North Fork of the Flathead River with regard to mining and energy extraction in British Columbia. Additionally, the issue of accounting for water as an increasingly precious resource has earned attention in the regional dialogue. These factors are justification for bringing the analysis from the *State of the River Report* up to date in order to have a clearer understanding of the current state of the watershed and the population residing in it.

It is expected that, due to the current state of the national and regional economies, some of the trends and patterns found in the *State of the River Report* will have changed. Although the patterns and trends in the watershed will continue to change due to ongoing current events, it is hoped that by understanding where we are now and how we got here will be an important reference for approaching the future. As in the *State of the River Report*, the goal of providing the analysis from this project will be to provide a "snapshot" from which "citizens, community leaders and business people can assess the health and wealth of this irreplaceable slice of Montana," (Clark Fork Coalition, 2005, 6).

The following section of this thesis looks to provide a more informed conceptual understanding of the demographic patterns and trends that have been observed in the study area, especially with regard to dynamics associated with the New West. An important focus will be given to the nature and impact of growth in the region, and the role that is played by natural and social amenities in attracting migrants to the area. The remaining structure of the thesis will review the methods used for deriving descriptive statistics from demographic data from the United States Census Bureau at the county level and below for the study area, and then will present the findings. Afterwards, a brief discussion and summary will review how the results depict the current socio-economic state of the Clark Fork watershed with regard to how the recent decade was affected by dynamics associated with the New West.

CONCEPTUAL BACKGROUND

This section provides the conceptual background for understanding the demographic and social patterns and trends that have been observed in the study area. The Clark Fork watershed is located in western Montana, and it is within the greater Rocky Mountain region, which includes the eight western states that are not along the Pacific coast. The watershed is influenced by similar changes to those occurring within the Rocky Mountain region over the past several decades. These changes have been referred to as New West dynamics (Flores, 1994; Gottlieb, 1994; Nelson, 1999; Rudzitis, 1999; Masnick, 2001; Power and Barrett, 2001; Limerick et al., 2003; Swanson, 2006; Travis, 2007). The concept of the New West provides a framework for discerning the various changing demographic dynamics that are creating developments and altering land use in the region. These new geographies affect not only land use and development but also water resources. An important element that is implicit in these new geographies is, as discussed below, amenity migration. This thesis draws on 2000 and 2010 population, housing and employment data to document the changes that the region has undergone over the past decade. While this presents an update on the Clark Fork Coalition (2005) *State of the River Report*, this study additionally sets out to understand these newly emerging geographies in light of the transition between Old West and New West dynamics. Once a background on these newer regional geographies has been provided, specific events that have occurred in the last decade, which are expected to have complicated these recent demographics in the region, will be reviewed.

Growth Patterns in the New West

Recent decades have seen a significant socio-economic shift within parts of the Western United States, particularly in the region defined by the Census Bureau as the Mountain Division

(hereinafter the Rocky Mountain region) (Flores, 1994; Limerick et al., 2003; Swanson, 2006; Travis, 2007). Traditionally, the economy of the Rocky Mountain region relied primarily on industries performing resource extraction, specifically mining and timber harvest, and agricultural practices involving ranching and cattle production. The social and cultural make-up of communities in the West was traditionally influenced by their reliance on these industries. To many Americans, the West still conjures up images of a simpler, more rustic way of life. This search for the "rural idyll" (Bell, 2006) is both responsible for and in tension with the changing demographics of the area. Travis (2007, 7) suggests that "the real West and the West of the imagination have arrived at a crossroads, with land use and development trends putting the region on a path at odds with its enduring values of wide-open spaces, ruggedness, and egalitarianism."

The image of the western frontier, Old West way of life that is so entrenched in the American sub-conscience is not generally reflected in what has come to be known as the New West (Shumway and Otterstrom, 2001; Swanson, 2006; Travis, 2007). In the past twenty years, the role of extractive industries as the economic engine of the region has given way to a "postindustrial" era that is fueled by jobs in the service industry, tourism, and information technologies, and which increasingly values access to natural and social amenities (Travis, 2007; Swanson, 2006). Shumway and Otterstrom (2001) characterize the Old West economy as having relied on extractive activities as well as expenditures by the Federal government on large infrastructure projects such as dams, power plants, military bases and highways. In contrast, New West economies are characterized by natural amenities, recreation-based activities, and retirement communities (Shumway and Otterstrom, 2001). Where Old West economies relied upon extracting resources from the land, the New West economy relies upon its preservation. A

somewhat less rosy way of describing this dynamic is that whereas the Old West economy exploited our natural resources, the New West economy exploits the "place" of our natural environment (Power, 1996). This shift has understandably led to a wide range of environmental and social change in the region, creating a host of growing pains that continue to be addressed at a variety of societal levels.

Changes associated with the New West are powered by a constant and robust population growth. Masnick (2001) and Travis (2007) note that amongst the four main regions of the United States, which also include the Northeast, the Midwest, and the South, the Western region has grown by percentage far more consistently and rapidly than other regions over the last century and a half. Swanson (2006) confirms that between 1990 and 2000, the American Southwest and the Rocky Mountain region grew faster than any other region in the country. In that period, the Rocky Mountain region grew from 13.6 million to 18 million by the year 2000, a 33 percent increase in population, and as of 2010 the population had risen again to 22 million, another 21 percent increase (United States Census Bureau 1990a, 2000a, 2010a). Over the two decade period, the Rocky Mountain region grew by 62 percent. Montana as a state saw a much lower rate of growth than this regional rate, but the population growth that it saw was focused predominately in the western side of the state, almost all of which consists of the Clark Fork watershed. Between 1990 and 2010, the population of the entire State of Montana grew by 190,350, and 79 percent of that growth was funneled to just five counties, including: Yellowstone, Gallatin, Flathead, Missoula and Ravalli (United States Census Bureau 1990a, 2000a, 2010a). Of the growth in those top five counties, three of them are located in the Clark Fork Watershed, and accounted for 41 percent of the total population growth in the state. In contrast, every county east of Yellowstone County lost population over the same time period,

except for McCone and Custer Counties (United States Census Bureau 1990a, 2000a, 2010a). However, it should be noted that this pattern is somewhat changed in recent years due to an energy boom in the eastern region of the state.

This explosive trend of population growth in the Rocky Mountain region is due primarily to domestic migration (Gottlieb, 1994; Mills and Hazarika, 2001; Vias and Carruthers, 2005; Swanson, 2006; Travis, 2007). The emergence of the "New West" out of the "Old West" (Shumway and Otterstrom, 2001) is paradoxically due in part to the allure of living in an Old West setting. A main attraction for the people who move to the region, and who play a key role in the socio-economic transformation that is occurring, is the character and authenticity of a region that is deeply mythologized in American western culture (Travis, 2007). Shumway and Otterstrom (2001) explain that the West is both a place and a process. As the region has changed largely in part due to the influx of people moving there in search of its original attributes, there is a contradiction between the values that attract people and how their arrival impacts the ability to preserve those values, as well as the landscapes which are so characteristic of the West.

Though continued growth has been a constant in the history of the West, there is a question as to whether the nature of that growth is now different than it once was. A traditional understanding of development in the region is based on the "boom and bust" cycle (Limerick, 2003; Travis, 2007) which was indicative of the nature of resource extraction. For example, as one community founded and "boomed" around silver or copper mining, it "busted" as those resources dwindled, while another would boom around the increasing infrastructure for harvesting timber or drilling a new found oil deposit. The assumption behind this boom-and-bust pattern is that communities expand and contract given the economic situation of the day, especially with regard to the presence of natural resources. However, in the New West the level

of contraction, or even whether there will be a contraction at all, can vary greatly depending at what scale the community is measured (Limerick et al. 2003). Just as the New West economy is increasingly divorced from extractive industries and instead tied more to natural and social amenities, the boom-and-bust cycle may be increasingly unreliable as a tool for understanding changes in the region associated with the New West.

Perhaps a more fitting approach to understanding changes in the region asks whether people follow jobs or jobs follow people (Carlino and Mills, 1987; Clark and Murphy, 1996; Mills and Hazarika, 2001; Partridge and Rickman, 2002; Hoogstra et al., 2005). Essentially, in the Old West economy it would be assumed that people follow jobs, driving the argument that with increased natural resource extraction comes increased growth and prosperity. A strong argument has been made that in fact the opposite is the case for areas now considered New West, and that the presence of natural and social amenities play more of a role in attracting migrants than the prospect of employment (Gottlieb, 1994; Vias, 1999; Deller et al., 2001; Vias and Carruthers, 2005). In one study example, Rudzitis (1999) surveyed people who had moved to a selection of Western counties and found that employment opportunity was accounted for by only 30 percent of participants, whereas other factors such as outdoor recreation, environmental quality, and scenery were rated as being much more important reasons for moving there. Even though it is simplistic to frame the issue of demographic change in the region through a solely jobs versus people lens, it provides a useful context for exploring dynamics of growth and change. For example, Knapp and Graves (1989) use this framework to explore the role that retirees play as in-migrants versus those looking for employment opportunities.

A clearer picture may be developed by highlighting the role that non-employment funds, gained from investments or set aside for retirement, play in New West economies (Nelson, 1997;

Deller et al., 2001). To varying degrees, affluence is both an indicator and an instigator for the New West, both allowing people to move to areas based on its quality of life rather than economic opportunity, and growing the overall wealth of the local economy. The transition from Old West to New West implies that whereas Old West economies were driven by production, New West economics based specifically in consumption (Shumway and Otterstrom, 2001), which brings on associated changes in the type of employment in the region.

The changes in growth and economy that are happening in the Rocky Mountain region are changing the geography of how people live, work and interact in the region (Shumway and Otterstrom, 2001; Swanson, 2006; Travis, 2007). Spatially, the geography of the New West is not spread uniformly throughout the region. It is not just a case of the Old West giving over entirely to the New. Rather, growth and development has been concentrated in those parts of the region that have specific qualities that are attractive to people looking to move to the region. Vias and Carruthers (2005) examined county growth rates between 1982 and 1997 by comparing the percentage of growth in four different category types: metropolitan, Old West, New West, and diversified. Their findings indicate that growth was predominately focused in New West counties, where the overall percentage of growth was 36 percent, (versus 7 percent for Old West counties.) Shumway and Otterstrom (2001) conducted a similar analysis, though with slightly different categorizations (adding Government, Farming, and Mining/Manufacturing on top of the categories used by Vias and Carruthers). Using the Hoover index for spatial focus at the county level for the rural Rocky Mountain region over a period of 50 years, they found that New West counties have the largest degree of population density among all county groups, and were the only group to have large sustained population concentration. What this means is that the remarkable growth rates that have been occurring in the West are focused almost solely on these

counties that exhibit New West characteristics. Between 1994 and 1997, 82 percent of in-migrants to the rural Rocky Mountain region moved to counties categorized as New West (Shumway and Otterstrom, 2001).

In order to understand the spatial pattern of population growth in the New West, it is important to consider the demographics of who is moving there and what enables and attracts them to move. There are two important demographic categories that help to illuminate these questions, which are age and income levels. The general assumption is that the Rocky Mountain Mountain region has come to be considered the "third coast" (Travis, 2007, 15); as traditional areas of retirement become overcrowded, those traditionally being Florida and California, retirees with disposable incomes are increasingly moving to the Rocky Mountain region where they can spend their golden years living in a scenic setting. This will be compounded by the onset of the mass retirement of the baby boom generation which is set to begin in earnest within the year 2012 (Travis, 2007; Cromartie and Nelson, 2009).

As discussed above, economies in the West traditionally relied on extractive industries such as agriculture, mining, construction, and manufacturing. These economic sectors are often referred to as the primary and secondary economic industry sectors. Typically, they are higher paying, more supportive jobs, and what economic base theorists once classified as basic sectors, or those sectors that should supposedly have a multiplying effect on more local economic sectors such as services, real estate, finance, and health care (Klosterman, 1990). However, Vias and Mulligan (1999) found that migrants to New West counties were predominately not attracted because of classic primary and secondary sector jobs. Moreover, it seems more likely that what were traditionally non-basic sectors in the economy are replacing the traditional primary and secondary sectors of extraction and manufacturing for what drives the economy. In order for this

to be the case, it seems necessary for financial resources to be coming from other sources than industry. This fundamental characteristic of the New West economy is shown in the dramatic rises in non-labor income that the region has experienced in recent decades (Nelson, 1997; Shumway and Otterstrom, 2001; Swanson, 2006, Travis, 2007).

The conceptualization of the New West is not without its critics. Even defining where and when the New West occurs can be problematic, much less whether the changes that are occurring there are a unique phenomenon. Robbins et al. (2009) suggest that dynamics associated with the New West are not specific to the region, but are rather reflective of larger scale socio-ecological forces playing out around the postindustrial world in similarly rural areas. They argue that the simplistic dichotomy between "old" and "new", including the transition from extractive to consumptive economies, deflects attention from "deeper trends that pull control of land and resources away from both groups" (Robbins et al., 2009, 373). A more pronounced critique comes from the New Historian School, which suggests that the New West has been a promotional idea, or sell, which masks a process of gentrification and increasing weakness in environmental and social justice. This claim that the New West is "better understood as boosterism than analysis" (Taylor, 2004, 142) is based on a lengthy history of "new" New Wests which have been produced throughout the past few centuries. Their critique suggests that the New West is a "simplistic and loaded trope" which has relied upon a "colonizing discourse" at the exclusion of minority viewpoints, and that it is more telling of what is being brought to the region rather than what was already there (Taylor, 2004, 165). However, despite these critiques of the gentrifying nature of changes associated with the New West, there is general agreement that accommodation through local coalition building is a product of the recent changes in the

region which have influenced environmental management and local governance patterns in positive ways (Riebsame et al., 1997).

There exist strong indications that the trends and patterns that are explained by a New West analysis have had a strong influence on the Rocky Mountain region over the past several decades. These include dramatic population growth that is concentrated in specific areas that attract the people moving there; an increasingly aging population; a shift in which service sector jobs play a greater role in the regional economy; and the expansion of income from non-labor sources, all of which have led to altered socio-economic geographies (Swanson, 2006). The question that this project looks to answer is whether those trends and patterns continued through the decade between 2000 and 2010.

Amenity Migration

Understanding the mechanics of regional demographic change inherently brings up questions of causation (Travis, 2007). In the case of the Rocky Mountain region, these questions center largely around why people are moving here and what impacts the growth they are causing has had on the region. The process of causation in migration studies is often referred to in terms of "push" and "pull" (Lee, 1966). In other words, what factors motivate people to leave their previous place of residence (the push), and what factors attract them to move to one place over another (the pull). As discussed above, the traditional pull for people moving to the West was jobs, typically in some form or another of extractive industry. More recently, however, evidence increasingly suggests that what is "pulling" newcomers to the region has shifted significantly from employment opportunities to the attraction of a higher "quality of life" (Gottlieb, 1994) and proximity to natural and social amenities (Cromartie and Wardell, 1999; Vias, 1999; Deller et al., 2001).

Gottlieb (1994, 272) defines amenities as "location-specific, non-exportable goods or services that primarily benefit employees in their role as residents or commuters," and notes that amenities provide an indirect positive effect. Knapp and Graves (2001, 72) suggest thinking of amenities as "location-specific factors that influence productivity therefore firm location decisions and the demand for labor," which suggests both that businesses as well as people are attracted to local amenities, and that there is a feedback nature to growth in population and employment. Vias (1999) notes that the types of amenities preferred by people have evolved over the decades to include not only climate and scenic vistas but also rural lifestyles. To be sure, amenities have expanded significantly beyond simply meaning "pleasant living conditions" (Ullman, 1954, 119), and have come to include more than natural dimensions, but also social factors such as good schools, universities, and other infrastructure and services (Booth, 1999).

Much of the earlier literature on amenities migration sets out to solve the enduring riddle of whether people follow jobs or jobs follow people (Carlino and Mills, 1987; Clark and Murphy, 1996; Vias and Mulligan, 1999; Deller et al., 2001; Hoogstra et al., 2005). The results of these various studies seem to indicate that this question is in fact rather complex, and that developing a satisfactory model to account for amenities, which are essentially non-market mechanisms (Deller et al., 2001), is difficult to do. The seminal study by Carlino and Mills (1987) used a partial adjustment model to estimate population and employment at the county level throughout the United States in an attempt to ascertain whether population or employment had a greater pull on the other. They found that employment in fact had the greater pull, though the only amenity variable that they used was crime rates and so had to rely on a set of dummy variables as proxies for more detailed amenity data. A follow-up study by Clark and Murphy (1996) used a similar method as Carlino and Mills (1987) to measure growth in the U.S. at the

county level using a higher level of amenity variables, and found the opposite result. Vias and Mulligan (1999) support their findings that population creates pull for employment. Deller et al. (2001) caution that a difficulty with the literature on amenity migration is that it has relied on ad hoc empirical and theoretical approaches towards understanding the issue.

Whereas only decades ago moving to the rural West may have seemed to some like a far off dream (or a forbidding prospect), a variety of factors have allowed such a change to become more feasible. Free trade and the rise of a globalized economy has increased connectivity of markets, improved technology and communications capacity, and brought about some displacement of traditional sectors of the U.S. economy due to competition with foreign markets with cheaper (and more exploitable) sources of labor. Global accessibility to and therefore competition for natural resources and the production of other commodities has made those traditional extractive industries, especially in the West, less competitive (Deller et al., 2001).

Meanwhile, income growth from economic sectors that have fared better from the globalization trend, such as technology, services, and communications, has enabled people and businesses to reach a level of "footlooseness" (Booth, 1999, 388) that enables an increased level of mobility based on preferences not based strictly on economic considerations. Nelson (1999) adds that income from self-employment and non-labor sources, such as investment in stocks, has dramatically added to levels of wealth over the past several decades. This growth in the overall pie, added with significant rises in home equity in various parts of the country, and the ability of retirees to depend on incomes such as pensions, dividends and savings that are not tied to employment (Vias, 1999), has created a segment of the national population that is free to make residential decisions based on wants rather than economic needs. Given this mobility, the call of natural amenities, open spaces, and a slower pace of life may be enticing for some in the face of

growing urban development and the various associate stressors, such as traffic, crime, crowding, etc., that accompany it. In fact, a survey-based study by von Reichert and Rudzitis (1992) found that people who move to high-amenity areas for quality of life reasons accepted income losses with their move, suggesting that people are willing to trade off income for amenities.

Deller et al. (2001) argue that income plays an especially important role in the amenity migration discourse, especially with regard to those factors enabling individuals to be more footloose and have increased mobility. More specifically, just as the spatial orientation of individuals moving to the region are concentrated in the high amenity areas that attract them, so too is the income that they bring with them. Between 1994-1997, out of the nearly billion dollars of income gain that the region experienced, 87 percent of it was located in New West counties (Shumway and Otterstrom, 2001.) Additionally, because in-migrants often times have a higher income than the residents of where they move to, the influx of income that new arrivals bring with them creates income growth in the area not just because there are more people, but also because individuals leaving the area generally have a lower income than those coming in, and may in fact leave due to being priced out of a community.

As the level of income that is concentrated in New West communities grows, it becomes more of a driver in those local economies, which has led to a shift from what was traditionally production based to consumption based economic sectors (Shumway and Otterstrom, 2001). This transition can play out in various ways. The service sector, which is where the majority of employment is located, includes both traditional consumption based jobs, such as coffee baristas and fishing guides, as well as professional service jobs like software development or legal representation. Traditional Old West employment in manufacturing or resource extraction generally provided relatively high wages and benefits, and often included union representation.

Employment in the service sector is much more varied, and though it may be where the growing number of jobs are found, it is much less assured of making a dependable living if those jobs are predominately consumption based.

Though it may seem that there are clear divisions between what constitutes the Old and New West, there is evidence that identifying who is moving to the New West is not nearly so simple. Nelson (1999) observes that new migrants to the region include not just old but young, educated professionals who found success in the technology and real estate booms of the 1990's. Travis (2007) notes that the Rocky Mountain region shows growth in all age cohorts, not just those of retirees, and that fertility rates in the region are above the national rate. Fulton, Fuguitt, and Gibson (1997) remind us that out-migration has decreased since the 70's and 80's, which has added to an increase in the overall growth rate of the region. Mills and Hazarika (2001) look at the migration of young adults from rural counties to metropolitan or different rural counties. They find that on the whole, rural areas are attractive in providing employment opportunities to educated young people from rural counties, but that it is rare for those opportunities to occur in their rural county of origin. This provides another layer of domestic, intra-regional migration patterns which complicates an understanding of who is moving to and throughout the region.

An even more nuanced picture is provided by Beyers and Nelson (2000). In their survey of four New West counties, they investigate whether the macro-level trends discussed above, those being the attraction of natural amenities, the influx of non-labor income, and a preference for rural settings, are corroborated "on the ground." Their findings muddy the waters of how accurate a New West analysis might be. For example, each county had at least one "Old West" economic sector that was an important part of the economy, and though those resource extraction sectors were not necessarily expanding, the authors caution that these sectors should still be seen

as an important element of the economy. They also found that the migration process was much more spatially and temporally complex than one of people simply moving from one place to another. In many instances, the process of moving "in" took place over several years as families either renovated what were once second homes, or lived in temporary housing while building their future place of residence. Additionally, although they saw high numbers of retiree migrants, those people were often retired in name only and were in fact employed full time in a variety of entrepreneurial endeavors. It should also be noted that, although the numbers may indicate high levels of in-migration, many instances were found where dissatisfaction or various other circumstances resulted in "failed migration" and "spillover" to other non-metropolitan areas that were more affordable. The authors suggest that the relatively high level of failed migration indicates the inherent subjectivity of understanding growth patterns in the New West (Jobes, 1992; Beyers and Nelson, 2000).

A key takeaway from this is that the Rocky Mountain region is influenced greatly by inter-regional, national and global trends. Similarly, inter-regional factors enacted by local state, county and town entities, such as growth policies, tax incentives or burdens, and focus on or neglect of infrastructure, also impact growth. Because of this, identifying specific and clear relationships of cause and effect can be a difficult undertaking. Travis (2007) attempts to resolve these contradictions by moving past push and pull mechanisms to a combination of driving, enabling, and shaping forces. These can be difficult to differentiate amongst, and in some cases they reproduce and feed back on each other. However, they help to synthesize the relationships between the various interactive factors that constitute the New West. National and global economic forces (which are enabled by communications, transportation, and construction developments), population growth, preferences for western landscapes, increased income

enabling mobility and employment flexibility, and a burgeoning cohort of retirees are all forces that drive, enable and shape each other to bring about changes in the region (Travis, 2007).

Impacts on Land Use and Development

Demographic changes in the region have produced corresponding impacts on the landscape. Although the growing population is predominately concentrated in specific high amenity counties, this does not result in concentrated, or dense, development patterns in those counties. In other words, the "footprint" that the incoming population growth has is disproportionately large (Travis, 2007). Vias and Carruthers (2005) describe New West counties as playing a hybrid role between metropolitan and traditionally rural counties, in that they experience the high population growth of more urban areas, but demonstrate the land consumptive development patterns of rural areas. This takes on special significance given that some of the primary appeals for the people who move to and live in the West are space, vistas, and independence. Many of the complaints and controversies over the impacts from growth on the region stem from the sprawling nature of new development, which not only visually impairs the landscape but brings with it the kinds of issues associated with growth that influenced people to leave their previous residence and move to the region in the first place (Vias and Carruthers, 2005).

One tool for gauging the nature of land use impacts is through a gradient. Booth (1999) conducted a study of 86 rural counties in California, Colorado, and Montana measuring variation in population densities. He discovered that, similar to the way in which cities decrease in density from the urban core to the outer suburbs, rural population densities decrease as distance increases from metropolitan areas. Additionally, this dynamic was mirrored in both employment and income densities. This presents the likelihood that incoming residents are expressing a

preference to not completely forego access to more urban areas and the services that they offer (McGranhan and Beale, 2002). This also points to a distinction in location patterns between people depending upon employment and non-employment based incomes. Individuals relying on employment-based incomes may be footloose to a certain degree, but still rely as well upon a proximity to urban economies, whereas people living on retirement and non-labor incomes have a greater degree of flexibility in where to locate. Within the Clark Fork watershed, a gradient analysis reveals that the fastest-growing and most populous counties all contain or are adjacent to the basin's most urban areas (Swanson, 2006).

Winkler et al. (2007) build on the gradient approach by assigning a typology of both classic and model Old and New West communities as a means of distinguishing between established and burgeoning New West communities, for which they use factor analysis to map their spatial distribution. Using this approach, it would appear that not only does development within the New West fall along a certain continuum, but that it exhibits patterns of clustering. Especially in areas with a combination of high levels of natural amenities, access to recreation opportunities, and proximity to public lands, it was found that communities with established New West traits often serve to stimulate more New West related growth in adjacent communities.

Travis (2007) describes another typology in order to characterize New West landscapes, comprised of four specific forms of development found throughout the New West. They are the metro-zones, the exurbs, resort zones, and the gentrified range (referring to what have come to be known regionally as "ranchettes"). Within this typology, the two phenomena that most relate to the Clark Fork watershed are those of the "exurbs" and the "gentrified range". These two models share many similarities, their main distinction being that the exurbs depend upon a

certain amount of adjacency to some level of metropolitan area, whereas the gentrified range is untethered to such an anchor (and for this reason all the more indicative of changes associated with the New West.) Exurbs are typically described as dispersed, low-density residential developments that include both rural and suburban elements (Travis, 2007). Both the exurbs and the gentrified range are distinguished by high population growth rates relative to other lower amenity rural areas. In fact, Cromartie and Wardell (1999) found that during the 1990's, areas that are considered exurbs (rural settings within commuting distance from metropolitan areas) experienced the fastest growth rates in the country. They also exhibit remarkably inefficient land use coefficients, meaning that the land developed per capita is greater than in other areas (Vias and Carruthers, 2005). This has the effect of multiplying the effect on the landscape so that growth rates which are already high for these rural settings see an even more inordinate effect on the landscape.

The exurbs have been critiqued as being an especially disruptive and even harmful development in the region. They have been linked with a number of negative ecological and social impacts, including habitat fragmentation, water quality and safety concerns, loss of agricultural land, and the over-extension of city and county services, to name but a few (Hansen et al., 2002; Swanson, 2006; Travis, 2007; Jarvis, 2008). Given that the exurbs now take up more land in the West than cities and suburbs combined (Travis, 2007), it seems clear that the growth occurring in the region demands attention and management for the sake of preserving the qualities (and the new amenity-based economies) that draw people here in the first place.

Recent Events: An overview of the decade and the "great recession"

The previous *State of the River Report* was released in 2005, and relied on data from the 2000 Census. A lot has happened since 2000, especially politically and economically, including

several international wars, political infighting at a level not seen in decades, and growing economic disparity throughout the country. However, the most impactful event with regard to the New West dynamics, and of more concern to local communities, is certainly the recession of 2008. As background, the 1990's saw gains in income from high finance investments and the expansion of the technology bubble, which burst in 2001 leading to a short recession early in that decade. The labor markets recovered form this quickly, and the economy began another period of expansion, particularly within the housing market. In fact, during the 2000's the homeownership rate across the country rose to its highest level ever. This followed a shift in the housing market over the last several decades from mortgages being financed primarily by banks to investors in the bond market. Because there was a real estate boom during the 2000's due to remarkably low interest rates, increasingly more investment funds were funneled into mortgage securities, which brought back record financial returns to investors, and raised the level of home equity that homeowners could use to fund further economic activity, such as buying a second home or seeking one's retirement in the New West.

This connection between homeownership and investment activity was central to bringing about the consequences of the 2008 financial crisis, which led to the recent recession and its ongoing recovery. When the subprime mortgage crisis hit due to junk bond investments, it caused a wave of foreclosures and mortgage defaults, causing people to lose their homes while at the same time upending the financial sector in Wall Street. The mortgage crisis led to the deepest recession since the Great Depression, precipitating steep layoffs, a surge in unemployment, and lost incomes. According to the National Bureau of Economic Research the recession lasted from December of 2007 to June of 2009 which was a period of 18 months (National Bureau of Economic Research, 2012). The recovery, however, is ongoing, and was

certainly much less advanced at the time that the Census was carried out. Of special note to this project with regard to the recovery are some of the responses by the Federal government to the recession, most notably the passage of a national stimulus package, the extension of unemployment benefits for an increasing amount of chronically unemployed individuals, and a number of financial bailouts to several industries, most importantly the auto and financial industries. The national dialogue surrounding this response has seen a variety of criticisms, from those who think it was both too much and too little. Regardless, the role of federal funds, especially during the end of the decade, should be considered.

Two significant consequences of the recession, especially with regard to this study, were a negative wealth effect, where individuals experienced the loss of assets due to the crash in the stock markets, and reduced mobility, as homeowners found themselves housing trapped. Specifically, this was because home values were dropping below the amount that many individuals still owed for them. These consequences have the potential to significantly undermine the types of mechanisms that have spurred dynamics associated with the New West, especially with regard to the role of amenity migration to New West communities. Specifically, a crippled or slowly recovering housing market, along with a stagnating economy, could potentially slow the previously rapid population growth in the region associated with the New West, which in turn implies associate impacts to development and land use in the region.

The Rocky Mountain region and in particular the Clark Fork watershed have been dealing with the local impacts of these national and global events, and although the effects of the recession were delayed somewhat in reaching the study area, they have certainly had an impact on demographic trends and patterns in the area. At the same time, a considerable economic boom has been occurring over the past few years outside of the watershed in eastern Montana,

related to oil and natural gas extraction. Under the context of this decidedly Old West phenomenon, it is hoped that this study can help to provide input on to what extent the current economic and political climate has altered the trajectory of New West dynamics in the watershed.

The following section will bring this contextual understanding home to the study area, and describe the data sources and methods used to investigate demographic indicators which will be used to evaluate how the Clark Fork watershed has fared in the past decade. It is hoped that by tracking demographic indicators through Census data and other sources, a better understanding of the new geographies described above can be ascertained. In all likelihood the impacts felt by the recession will continue to persist for some time, meaning that individuals will continue to experience higher levels of unemployment, lower overall income levels, increased income inequality, and lower rates of homeownership. This suggests that giving a solid picture of what changes occurred over the most recent decade will provide a foundation for a beneficial understanding of what the watershed community can expect in the foreseeable future, especially taking into account that only the final years of the decade were affected by the recession.

STUDY AREA, DATA, AND MEAUREMENTS

Though the idea was present from the first European explorations of the West by John Wesley Powell, there is a growing movement towards using ecosystems, specifically watersheds, as a more appropriate unit of measurement for examining human-environment interactions (Reuss, 2005; Westcoat and Halvorson, 2012). It is a response to inabilities in the past to address issues at the community and environmental level that do not fit easily within political jurisdictions. This project uses the Clark Fork watershed as the study area and looks to build on the previous *State of the River Report* produced by the Clark Fork Coalition (Clark Fork Coalition, 2005) by updating the socio-economic analysis of the area. This section provides an in-depth description of the Clark Fork watershed study area, and explains the data sources and methods used to generate the results in the findings section. An essential component of discussing the methods for this project is justifying why the socio-economic indicators that are used in the analysis are appropriate, and how they allow for an assessment of the types of New West dynamics discussed in the previous section that are present in the watershed.

Study Area

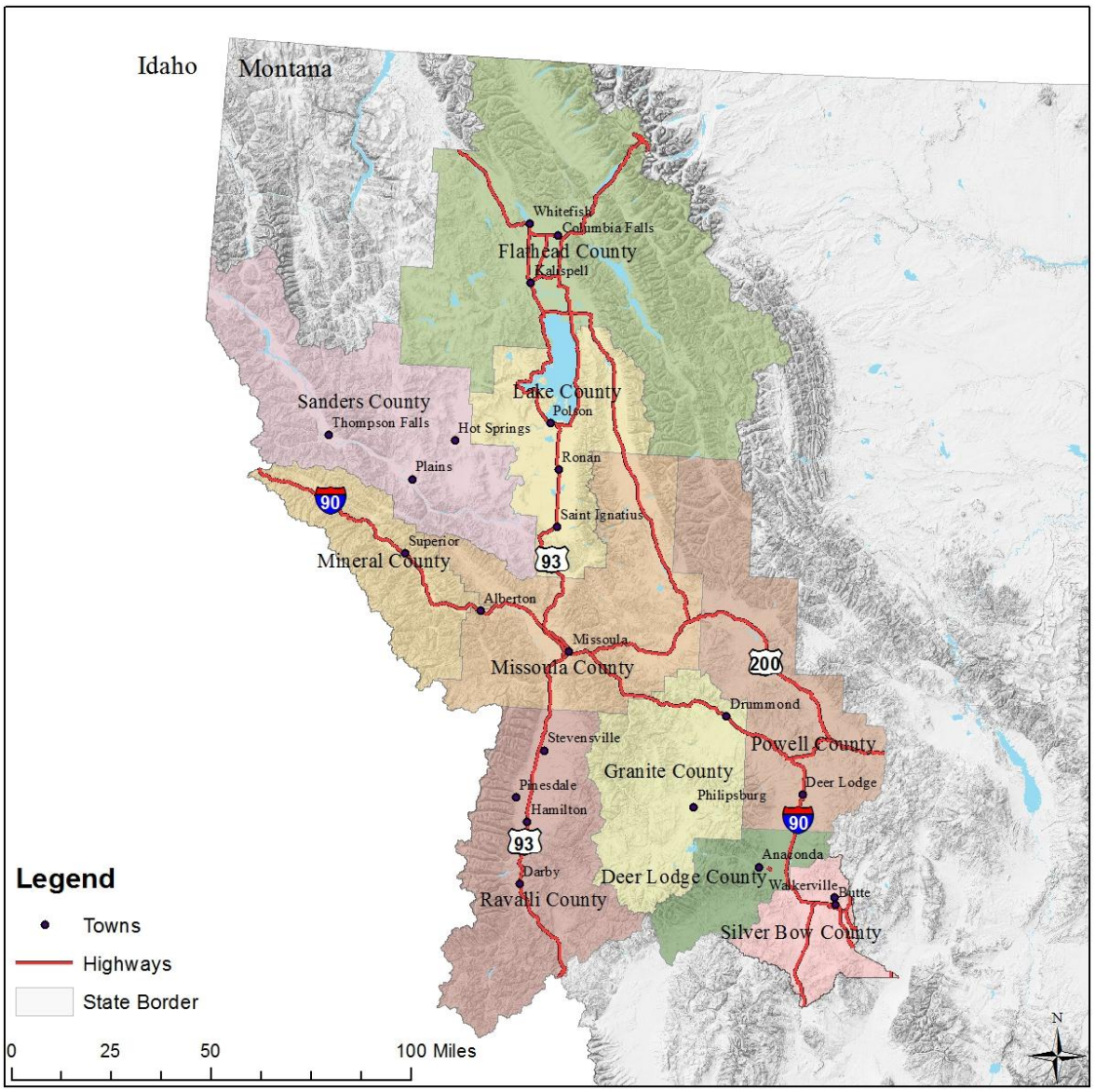
Geo-political Characteristics

The Clark Fork watershed is "the backbone of Western Montana," and is home to a third of the people who live in Montana (Clark Fork Coalition, 2005, 5). The watershed incorporates some of the best that Montana has to offer in terms of its wild and scenic areas, economic centers and cultural vibrancy. The watershed is also the recipient of the waste and excess of over 100 years of intensive industry, and has been shaped by a history of inconsistent and conflicting land use patterns. The location of the watershed is presented in Map 1.

The watershed study area can be defined and subdivided using political and physical boundaries. Physically, the Clark Fork Watershed encompasses an area of 22,000 square miles,

Map 1: Location of the study area in the United States
Source: Natural Resources Information System (NRIS), nris.mt.gov/gis, last accessed February, 2012

nearly a sixth of the size of the State of Montana, and shares borders with Canada to the north, the Rocky Mountains to the east, and Idaho to the south and west. The Clark Fork watershed is a headwaters basin, which means that all of the water leaving the basin originates within it (Department of Natural Resources and Conservation, 2004). The headwaters to the basin are found along the continental divide, which separates western Montana and the interior Pacific Northwest from the eastern plains. The water that accumulates as snowmelt in the Rockies travels west through the various tributaries in the watershed to the basin's endpoint at Lake Pend Oreille on the Montana-Idaho border. The watershed as a whole is a sub-basin to the Columbia River. Water gauges measuring outflow in to Lake Pend Oreille show an annual discharge of over 14,000,000 acre-feet (Petersen-Perlman and Shively, 2008), which is roughly equal to the volume of the entire Colorado river, and twice as much volume as the Missouri river where it leaves Montana (Clark Fork Coalition, 2005). The watershed receives between twelve to twenty inches of precipitation a year on average, the amount of which generally increases with elevation gain.



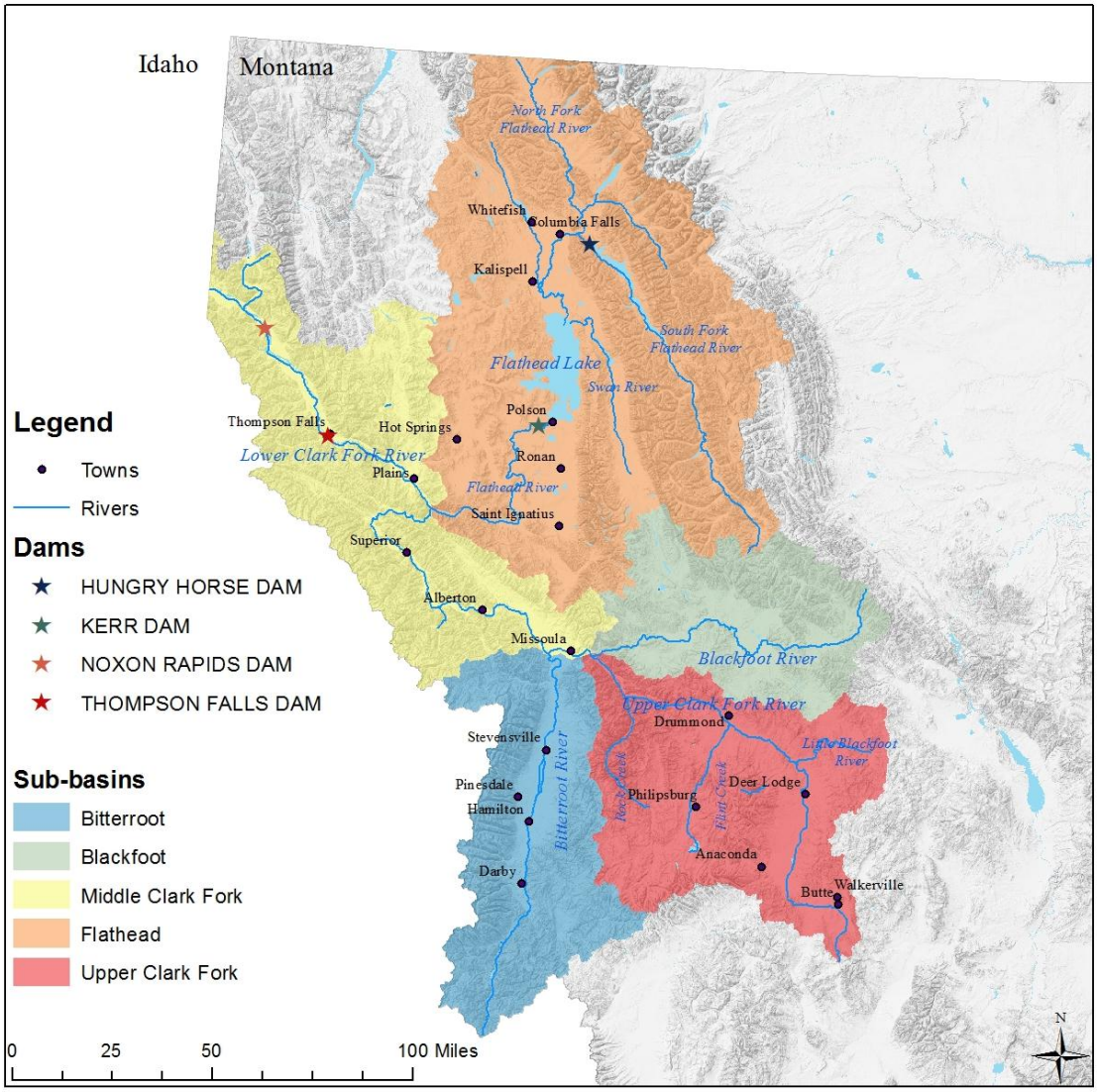
Map 2: Clark Fork watershed and associate counties and major roads
Source: Natural Resources Information System (NRIS), nris.mt.gov/gis, last accessed February, 2012

Politically, the study area includes almost all of the ten most western counties in Montana, including Mineral, Sanders, Flathead, Lake, Missoula, Ravalli, Deer-Lodge, Granite, Powell, and Silver-Bow (see Map 2). There are two counties, Lincoln and Lewis and Clark, where less than five percent of them cross over into the watershed boundary and so for the purposes of this project are not included in the study area. The I-90 freeway bisects the watershed from east to west, and Highway 93 is the main travel route from north to south between the Bitterroot and Flathead sub-basins. In some instances, patterns in the study area can

be more easily defined by tagging them to these highways. This is especially helpful in the case of Highway 93, which connects Ravalli, Missoula, Lake, and Flathead counties, all of which exhibit patterns associated with the New West.

Determining the study area along political as well as geographic lines is necessary because of the nature of the data being used. When using Census-derived data, the indicator being analyzed determines what scales are available for analysis. Some types of data, such as those included in the decennial census, which focuses almost solely on basic counts, are available at the most detailed scale. More rich data, on the other hand, which the majority of this study relies upon, is available at less detailed scales in order to protect people's anonymity, especially in smaller communities such as many of those that are found in the study area. The county level then is often the appropriate scale to conduct much of the analysis for this project, and even though some of the county boundaries do not match up with those of the watershed, they are a useful and necessary unit of measurement for analyzing socio-economic indicators in the watershed.

The study area includes five sub-watersheds, including the Upper Clark Fork, the Blackfoot, the Bitterroot, the Flathead, and the Lower Clark Fork drainages (see Map 3). These sub-divisions are useful for providing both a reflection of the geography of the watershed, and a beneficial aggregate unit of measurement which can be used as an alternative to the county. As noted above, different indicators in the report will necessitate a different scale of analysis, and for those that allow using smaller units than the county level, such as the census tract, it presents an opportunity to more accurately reflect demographic patterns upon the watershed itself, rather than political borders that have little basis in the landscape.



Map 3: Study area divided by sub-basin
Source: Natural Resources Information System (NRIS), nris.mt.gov/gis, last accessed February, 2012

Natural stream-flow patterns in the basin are influenced by a variety of human factors. There are two major dams in the watershed: the Hungry Horse dam, which creates the Hungry Horse reservoir, and Kerr dam at the bottom of Lake Flathead. Consumption of water is another human factor that significantly alters the natural hydrology in the basin, both on a municipal and individual level. Map 3 also shows the location of municipalities and major dams in the watershed. The largest urban areas in the watershed are Missoula, which sits at the confluence of

both the Blackfoot and Bitterroot rivers with the Clark Fork, Kalispell, which is at the top of Lake Flathead, and Butte, which is located near the headwaters of the Upper Clark Fork

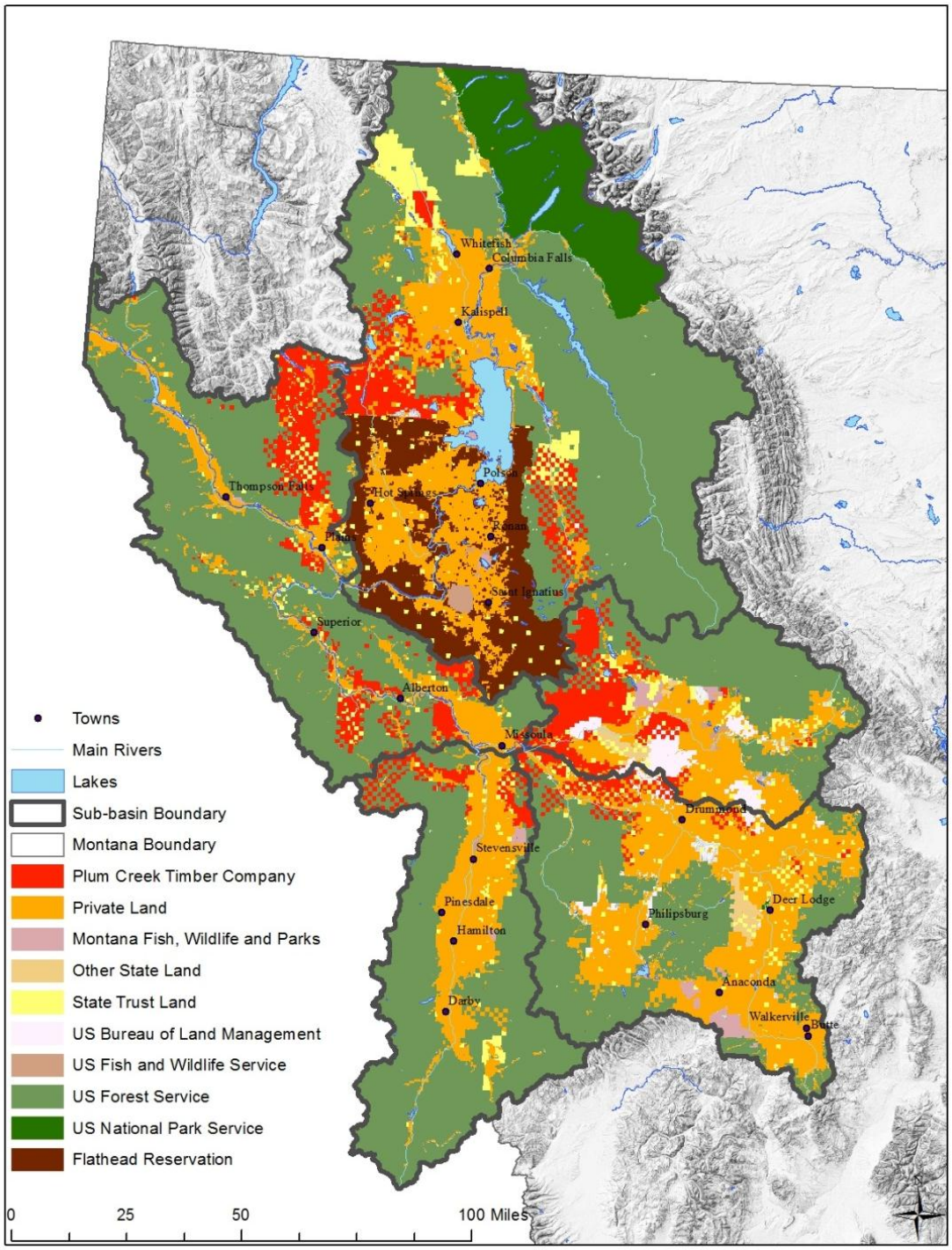
The history of the Clark Fork watershed is defined by its role in serving as a conduit for the discharge and waste from mining for gold, silver, and copper, and the associate smelting and milling practices which began in the late 19th century. Specifically, mining operations in the Butte and Silver Bow area routinely deposited the waste from mines and mills into Silver Bow Creek, which leads in to the Upper Clark Fork River. These deposits were matched by the waste that was disposed of into Warm Springs Creek by the smelter in Anaconda, which also empties into the Clark Fork River. Additional toxicity was deposited aerially throughout the surrounding area from the smelters in Anaconda. Further accumulation of metals was caused by the practice of agricultural irrigation from the water in already contaminated segments of the Clark Fork and its tributaries. Over the years, increased water levels due to spring runoff and flooding helped wash the metals further and further down the river, where in some cases it settled into the surrounding sediments (Environmental Protection Agency, 2004)

Because of the massive extent of this history of pollution, large stretches of the Clark Fork River have been designated as superfund sites by the federal government. The removal of the Milltown Dam outside of Missoula, which occurred at the end of the decade, was one big step towards ongoing efforts to remediate the huge amount of ecological damage that was done in the past century. The history of the watershed serves as a reminder of the potential impacts on the landscape that once occurred in the classic Old West model. It remains to be seen what the legacy of the New West will be, given the disproportionate amount of development which often accompanies the rapid population growth that is one of its main characteristics.

Land Ownership and Development Patterns

Understanding the distribution of land ownership in the watershed is important in order to understand its land use and development patterns. Map 4 idetnifies where the distribution of land ownership focuses the potential for future development. Publicly owned land encircles the majority of the watershed, and includes the Bitterroot and Lolo National Forests to the south and west, the Kootenai National Forest to the north, and the Flathead National Forest to the east. The watershed also borders and receives a portion of its headwaters from Glacier National Park. Publicly owned land is not available for development by individuals beyond certain leasing activities. In the watershed, fully 65 percent of the land area is publicly owned, and 91 percent of that public land is federally owned (mainly by the U.S. Forest Service), with the remainder either in ownership by the state or managed by land stewardship groups. The watershed also incorporates the Confederated Salish and Kootenai (CSKT) Reservation, which has a complicated land-ownership pattern and history all to itself.

Private land accounts for 6,517 square miles of the watershed. The majority of land that is privately owned and where development has already occurred within the study area is mainly in the valley bottoms and so in closer proximity to the rivers themselves. The location of private land in the watershed raises serious concerns about impacts on water quality. Just as this land is available for development, it also includes the region's prime agricultural lands, provides important riparian habitat for a variety of species, and is the watershed's most prone area to flooding and changes in the course of rivers. The intersection of development with watershed ecosystems often leads to issues of nonpoint source pollution, water quality, biodiversity, and global warming (Bockstael, 1996).



Map 4: Land ownership patterns in the study area
Source: Natural Resources Information System (NRIS), nris.mt.gov/gis, last accessed February, 2012

The most notable private landowner in the watershed is the Plum Creek Timber Company, which, despite its name, has refocused its business orientation on real estate in the past decade (Briggeman, 2010). Plum Creek owns 25 percent of the private land in the

watershed, much of it located in what is considered desirable, high-amenity locations. A large portion of land belonging to Plum Creek is located within the Widlerness-Urban Interface (WUI), which brings up concerns related to fire danger and ecological habitat fragmentation (Vias and Carruthers, 2005). Development in the WUI is also often characterized by highly inefficient, low-density exurban development. Though the role that large landowners, especially Plum Creek Timber, play with regard to changes associated with the New West is outside the scope of this paper, it seems important to note the unique role that they may play with regard to current and future development patterns in the watershed. The sheer volume of land that is owned by Plum Creek Timber puts the landowner in a regulatory class of its own, which has implications for how communities are able to influence the extent and type of development that is occurring. The recent neighborhood plan developed by the community of Seeley Lake in Missoula County, which was done in partnership with Plum Creek, is instructive for further examination of how Plum Creek Timber can influence important land use decisions within a smaller community (Missoula County Rural Initiatives, 2010).

Growth Dynamics in the Watershed

Throughout the bulk of the last two decades, many areas within the Clark Fork watershed exhibited the types of demographic trends and patterns associated with the New West. Specifically, the watershed saw shifting migration patterns based on the presence and allure of natural amenities, a steadily aging population, and a significant change in the makeup of the local economy from traditional extractive and agricultural industries to a more service-based economy driven partly by a rise in non-employment income (Clark Fork Coalition, 2005; Swanson, 2006). However, possibly due to the advent of the current global recession, it is

expected that some of the trends and patterns that are indicative of the New West will have changed.

The uneven way in which population has throughout the valley is indicative of the kinds of growth patterns that are associated with the New West. Silver Bow County, home to the town of Butte which was at one time the most populous city west of the Mississippi river (and perhaps the most iconic symbol for the history of extractive industries in the region), contains 10 percent of the watershed's population, but has shown little to negative growth in the last several decades. Other counties in the watershed that have seen either very little (less than three percent) or negative growth in the last decade are Deer Lodge, Granite, Mineral, Powell, and Sanders counties. In fact, just three counties in the watershed, Flathead, Missoula, and Ravalli, contain the lion's share of the population (71 percent), and over the last decade these same three counties received 91 percent of the population growth (United States Census Bureau, 2000a, 2010a).

The low-density, dispersed, exurban character of land use that characterizes population growth in New West areas is present in these fastest growing counties in the watershed. This type of development is spurred on by new residents drawn to the allure of natural amenities and access to natural features and outdoor recreation areas, combined with a desire to be in proximity to the services provided by urban areas. Exurban development is criticized for creating negative environmental, socio-cultural, and fiscal impacts on communities. These impacts are exacerbated when planning regulations are weak, which they are in many areas of the watershed. Additionally, exurban development typically occurs outside of consolidated areas, or outside of towns and cities that have developed infrastructure for development such as sewers and other utilities. This type of development has also been occurring in the fastest growing counties in the watershed. Between 1970 and 2000, the population of Ravalli County grew by 74 percent in its

incorporated areas, but nearly tripled in size in its unincorporated areas, with 178 percent growth. Flathead County, which has some of the larger urban areas in the watershed, grew only 38 percent in those incorporated areas, but grew by 125 percent in unincorporated areas (Montana Department of Commerce, 2012).

However, this is not to say that growth has only occurred in the unincorporated areas of the watershed. In fact, between 1970 and 2000, incorporated and unincorporated areas had the same percentage of growth at 48 percent, and based on Census estimates for population numbers in 2009, growth in incorporated areas was ahead of growth in unincorporated areas. This phenomenon is further explored in the results section of this paper, but it presents the possibility that growth patterns have changed in the last decade in ways that challenge assumptions of a New West understanding of demographics in the region.

This section has attempted to provide a more detailed description of the study area and to place it in the context of demographic changes and dynamics associated with the New West. The following section examines the data sources used to derive the findings in the following chapter.

Data Sources

This project deals mainly with data for population, housing, and the economy. For these subjects, though especially with regard to population and housing, the dominant source is provided by the U.S. Bureau of the Census through the decennial Census of Population and Housing. The Census of Population and Housing consisted until recently of short form and long form data. Short form data presented a count, and long for data presented a survey. After the 2000 census, the survey portion, or long form, has been transitioned over to the American Community Survey (ACS). The census is released on a decennial basis, meaning every ten

years, and up until the 2000 census this was true for both the short form basic population counts and the long form surveys. For the years between each decennial census a series of estimates are produced by the Bureau to provide information about demographic changes. The 2010 census, the release of which led to this project, includes only an update on the data that was typically included in the short form of the census. Beginning in 2005, the ACS, or survey data, was switched over to being conducted on a yearly basis. This changes the nature of the data that is provided by the ACS, and will affect the way in which survey data from the census is analyzed and interpreted into the future.

Census data is but one possible data source out of many that are available for analyzing dynamics associated with the New West. A variety of academic and professional surveys have been conducted which offer insight into various socio-demographic indicators (Gottlieb, 1994; Mills and Hazarika, 2001). Shumway and Otterstrom (2001) utilize a typology of counties combined with an index of natural amenities provided by the Economic Research Services. They also access Internal Revenue Service files in order to examine county to county migration patterns. Vias and Carruthers (2005) use USDA National Resources Inventory information in order to measure regional development and land use change in the region. This project uses census data and other Census Bureau products, as well as data from the BEA and Department of Labor Statistics, because they are easily accessible, and provide uniform, comparable data across the study area. The following sections give a more detailed description of the various census data sources that are used for this project.

Population Data Sources

Census data is obtained in one of two ways. Counts, such as those provided by the decennial census, are the most accurate method of accounting for population size and

characteristics, but of course can be costly to obtain and may be problematic for reasons of privacy and civil rights. Estimates are created through surveys, and rely on various statistical approaches to producing an informed guess on the status of a characteristic. The two main sources of population data used for this project, the decennial census and the ACS, consist of counts and surveys, respectively.

The decennial census attempts to obtain a complete count of population and housing throughout the country, which is done through contacting every residence in the United States through mail or by personal contact. The 2010 census asked a total of 10 questions. The questions included a count of people in the residence and the age, sex, and race of those people. The questions also ask about the nature of the residence itself, including what type of housing the residence is (i.e. home, apartment or mobile home) and whether it is owned or rented. The decennial census provides a snapshot of some of the most basic population and housing trends in a ten year period.

Whereas the decennial census provides a count of the number of people living in an area, the ACS provides information on how they live. The ACS questionnaire includes detailed questions relating to age and sex, disabilities, ancestry, time spent commuting to work, family relationships, origin of birth, languages spoken, veteran status, and so on. For the purposes of this project, the types of questions used are those relating to employment, income and earnings, and poverty.

The ACS is not sent to every residence in the country, but is rather filled out by a *sample* of the population in order to *estimate* various demographic characteristics. Additionally, as of 2005 the ACS is now an annual survey. Table 1 presents when ACS datasets are released for different units of analysis based on the size of population. The results from the ACS are

available on an annual basis for larger units (those with over 60,000 residents), but is aggregated into multi-year period estimates for smaller units. Therefore, the ACS is both a spatial and temporal estimate. The results given by the Census Bureau for ACS data are accompanied by an associate margin of error, calculated by the Census Bureau, which is important to consider when drawing conclusions from ACS data. For units containing between 20,000 to 60,000 residents, ACS data is released in 3-year estimates, and for units with smaller populations than 20,000, the data is released in 5-year estimates. A breakdown of which counties are covered by which type of period estimates is provided in Table 1. Because the study area includes counties with populations of less than 20,000, this study will rely upon 5-year estimates for all counties in the watershed.

Size of County by Number of Residents	*ACS Period That Estimates Are Available*	*Counties in Study Area*
>60,000	1-year, 3-year, 5-year estimates	Flathead, Missoula
20,000-60,000	3-year, 5-year estimates	Lake, Ravalli, Silver Bow
<20,0000	5-year estimates only	Deer Lodge, Granite, Mineral, Powell, Sanders

Table 1. ACS schedule of release based on size of county by population

Economic Data Sources

Along with census counts, the main source for economic data that is accessed for this project is the Bureau of Economic Analysis (BEA) Regional Economic Information Systems (REIS). REIS data is a compendium of economic data gathered throughout a given year by the BEA. The REIS conducts counts several times throughout the year, and shows the accumulated numbers as its annual count. The REIS, then, tends to show an inflated count of employment, as it might calculate one person working several jobs over the course of the year to be several workers. REIS includes information for various economic, including the government and the

military, and also accounts for both self-employment and part-time work. Despite the variable of not knowing how many people are actually working the number of jobs counted, REIS data provides a more relatively comprehensive survey of overall employment by sector.

In the interest of protecting anonymity, both the Census Bureau and the Bureau of Economic Analysis do not disclose information when they deem that providing those numbers would allow data users to make assumptions on who is included in those counts. This results in the inclusion of holes in some of the data with associate "flags" that give an estimate range of what the value for that hole could reasonably be. It is up to the data user to fill those holes with estimates based on the associate flags, which inevitably leads to inaccuracies in the data. As the study area for this project contains a number of communities with very low population counts, there were a number of "flags" contained in the economic data that was accessed. As the values for those "flags" are self-generated, it is important to remember that some of the numbers included the economic data are estimates and should be taken with a grain of salt.

Throughout the remainder of this thesis, the data sources for tables, figures, and maps are provided, along with the specific reference number used by the Census Bureau or BEA. The following section describes the methods employed in generating the results for this project.

Methods

A number of descriptive methods are employed in this project in order to produce a meaningful analysis of demographic and socio-economic dynamics in the project area. The indicators which are analyzed depict two types of dynamics: trends and patterns. Trends look at demographic shifts over a given temporal scale. Patterns look at demographic dynamics within a given spatial scale.

In all cases of community analysis which employ descriptive statistics, as this project does, it is vital to be cognizant of what indicators include and how they are derived. A crucial concept in this is the idea of the 'universe.' The universe is considered the totality of whichever indicator is being analyzed, and it will vary depending on which demographic variables are being explored. In other words, the universe is the denominator of one's given indicator. For example, examining the changes in new housing stock during the two decades since 1990 versus the period of time between 2000 and 2010 will yield different implications. As a general rule, expanding one's universe gives diminished returns with regard to specificity and accuracy.

Most often the universe used here is determined by the census data itself, though at times it is necessary to determine a different universe. There are instances throughout the remainder of this thesis where more specific universes have been calculated to better understand and represent some of the trends and patterns that have occurred in the watershed over the past decade. The remainder of this section explores the methods of community analysis that are used in this project.

Numeric Change, Rates of Change, and Proportions

Perhaps the most basic, though fundamental, question being addressed in this paper is: What is different in the watershed at the end of the decade than at the beginning? The most basic answer to this question comes from comparing specific values between the beginning and end of the decade. For example, are there more or fewer people living in the watershed now than a decade prior? However, for many of the indicators used in this project, merely calculating the difference from one year to the next is not enough. This is because most indicators are informative only to the extent that they are understood as one component of the greater population. As another example, if there is population growth in an area for individuals between

the ages of sixty to sixty-four, this fact takes on different import if it is known that the overall population in that area actually shrank.

The basic premise here is that, for many of these indicators, the value of the universes that apply will have changed over the course of the decade. Therefore, in many cases, it is more useful to look at the composition of a socio-economic indicator as a proportion of the whole. Essentially, even though the pie may grow or shrink, it is more indicative to know what change happens amongst the slices.

Rates of change are used to examine the extent of relative growth or decline. Most often, the rate of change is calculated by dividing the difference between the values for two time periods by the value for the original time period. Therefore, the universes for rates of change are almost always the value for the initial time period. For example, if a town of 100 people in 2000 has 110 in 2010, it will have grown at a rate of 10 percent. If it grew to 200 people, it would have grown at a rate of 100 percent.

There are potential traps when working with percentages. It is especially important to keep in mind the value of the universe being used. Values for percentages can fluctuate greatly for small universes or numbers. This becomes problematic at times working within the watershed, as the population distribution throughout the region is quite uneven. Therefore change in percentages for the more populous areas, such as Missoula and Flathead counties, may seem much less dramatic than for less populous counties, even though the volume of change will be much greater.

A similar caution must be given for rates of change between the more or lesser populous communities. In analyzing rates of change, as the initial value of an indicator increases, added growth to that value will appear as a declining rate of change. For example, between a town of

ten and 100, adding ten more people to each would show a rate of change of 100 percent for the first town, and ten percent for the second, even though they are growing by the same amount of people. Because of the uneven population distribution in the watershed, this is an especially important point to keep in mind.

Reference Regions

To provide a context for interpreting demographic and economic indicators for the Clark Fork watershed and the counties it includes, information for reference regions is provided as well. These reference regions are the United States as a whole, the Rocky Mountain region as defined by the U.S. Census Bureau, and the State of Montana. The Rocky Mountain region corresponds to the Mountain Division as defined by the Census Bureau, and it includes: Montana, Idaho, Wyoming, Nevada, Utah, Colorado, New Mexico, and Arizona. Each reference region is of a different scale, and within each scale are aggregated a different subset of factors. Therefore, each region offers a different set of benchmarks from which comparisons can be made to findings within the watershed.

Using reference regions helps to gauge the extent to which trends and patterns in the watershed may be related to or influenced by larger regional dynamics. The country as a whole is used because it provides a comparison to national benchmarks. The Rocky Mountain region is relevant as a proxy for the greater region that may be experiencing changes associated with New West dynamics. And the State of Montana may provide some insight in to how the watershed, and changes occurring within it, may be unique do to its own specific geography, and also as a proxy for what could be considered concurrent Old West trends and patterns.

Location Quotients

Location quotients are used to measure the concentration of demographic characteristics, either spatially for population or by sector for economies. Location quotients are not comparisons, as the study area must be included within the larger reference area. Essentially, location quotients evaluate which characteristic in a study area is over- or under-represented in relation to the greater reference area.

Location quotients are useful for identifying pockets or concentrations of various characteristics. When interpreting a location quotient, the reference region is given a value of one, and the region under analysis is then given values that correspond to the reference value. If the value for the region being analyzed is greater than one, then that sector is over-represented in comparison to the reference region. If it is less than a value of one, then it is under-represented.

The following section explains why the specific indicators used in this project provide for a meaningful analysis of population change within the watershed.

Demographic and Socio-Economic Indicators

Community analysis is applied in order to better understand the demographic patterns and trends of a community. This project is primarily interested in the potential impacts from dynamics associated with the New West, and the ways in which development and land use patterns interact within the ecological area of the Clark Fork watershed. As there is no direct way of determining these characteristics, it is necessary to use specific indicators which, when seen in relation to one another, will help determine the greater dynamics that are at work in the basin. The following section provides a description of the socio-economic indicators that are included in this project.

Population

Population indicators examine what characteristics about the people who live in a community standout over others, recognizing that varying characteristics imply a diverse and fluid set of needs and impacts that will be found throughout a society's interaction on the landscape. The population indicators used for this project are population growth and decline, growth in incorporated and unincorporated areas, and changes in age. Population growth, or decline, has a significant impact on a community. Growth could be an indication of increased economic activity, prosperity and community well-being, and population decline could indicate the opposite of those trends. However, growth may also increase social and economic stressors in a community, and lead to income stratification. Similarly, population growth usually leads to increased development, which directly feeds into land use patterns such as exurban development or development in the WUI (Vias and Carruthers, 2005) and potential adverse effects on water quality. In a similar vein, certain types of development may affect the appeal of the natural amenities that attract new population growth to the area in the first place. Examining residential density patterns throughout the watershed helps to identify where such land use and development patterns have been focused.

Age distribution is a significant indicator of the population because people have different sets of needs and wants at different stages in life. The country as a whole has been gearing up for the retirement of the baby boom generation, who are defined by the Census Bureau as being born between 1946-1964. The baby boomer generation makes over a quarter of the total U.S. population. People in the baby boomer age range tend to exhibit specific socio-economic characteristics from other segments of the population, such as higher employment rates and education levels. People of that age range are highly correlated with the dynamics of amenity-

driven migration (Vias and Carruthers, 2005; Swanson, 2006). However, most individuals who fall within the age range for baby boomers still had not reached retirement age at the time of the most recent census, and so the full anticipated effect of the baby boomers reaching retirement age may not register for this project.

Age distributions of younger generations are important to consider as well, especially the "echo generation" (Swanson, 2006, p. 23) or children of baby boomers. Younger generations influence growth through migration and children of their own, and require a different set of services from a community than older generations, such as schools and recreation areas, and may influence different land use and development patterns.

Housing

The nature and availability of housing are indicators that are critical for attracting and sustaining employment and population growth (Cook et al., 2009). Housing characteristics provide further indication of the growth or decline of a community, and also help to calculate whether the financial cost of living is supported by a community's economy. Housing indicators also help determine whether income stratification or employment patterns make for affect cost of living for residents of a community. The housing indicators used for this project are housing density, rates of new construction, occupancy rates and tenure rates for rent and ownership, housing units for seasonal or recreational use, and housing affordability.

Occupancy rates are broken up between measurements of vacancy and tenure. Vacancy measures the proportion of homes that do not contain residents, and includes an account of vacancy due to seasonal or occasional use. Seasonal use implies the presence of second homes or a seasonal economic cycle, whether around recreation or resource management. Information about tenure is provided about occupied housing units, and tenure rates reveal whether

residences are occupied by owner or by renter. Traditionally, tenure rates have been used to gauge the quality of the housing market in a community, to assess the demand for housing, and to look at the role that housing plays within the community economy.

Numbers on new construction provide a similar perspective on growth, as construction is seen as co-occurring with growth in the economy and is representative of the type of "booms" upon growth in the West has historically been based. The ACS surveys residents on the year that their home structure was built, which can be used to estimate whether construction is occurring at a faster or slower rate than in previous years. High development rates have implications for land use and effects on water quality. Implicit in this statistic is that population densities lower as growth occurs further out from metropolitan areas (Vias and Carruthers, 2005), which makes for lower land use efficiency. For counties that are adjacent to other counties with metropolitan areas, even though growth may occur at the same rate as metropolitan areas, the development in those counties may be more exurban and sprawling in nature.

Affordability is a very important indicator of whether the cost of living in a community is supported by its economy, and has come to take on a special resonance given the role that the failing housing market has played in the current recession. Affordability of housing typically compares the median home price in a community to the median family income. Affordability measures for renters look at whether more than 30 percent of income is spent on gross rent, which includes utility costs, and for home-owners, whether more than 30 percent of income is spent on a mortgage. A more focused look of the most extreme levels of unaffordability are measured by looking at families that spend more than half of their income on gross rent.

Employment

The employment indicators used for this project are the changes in dominant employment sectors, and unemployment rates. The preeminent narrative of changes in the regional economy due to New West dynamics is a shift from traditional extractive industries to the service sector. A major component of this has been the shift from employment found in the traditional primary and secondary employment sectors, which include mining, agriculture, manufacturing, construction, to the service sector. The service sector incorporates a wide variety of employment types, from retail and wholesale trade to financial, legal, health, business, and management services. This is not to say that traditional Old West economies are being completely replaced by the service sector. Beyers and Nelson (2000) found that there has been very little direct competition between Old West sectors and those associated with the New West, and it is expected that economic sectors in some counties in the study area will exhibit markedly different characteristics from others. However, changes in which economic sectors are dominant is an important indicator of overall demographic changes in a community. The most significant of these changes, which is indicated by a growing service sector, is a shift from an economy based on production to one based on consumption.

There are a variety of ways to approach what role individual economic sectors play in the community and in comparison to a greater region, and the primary goal of doing this is to measure which sectors are growing or declining. Economic growth is generally seen as beneficial to a community. However, there is an important distinction in that more jobs do not necessarily signify higher wages for individuals. A concern for areas influenced by New West dynamics is that because people are more attracted by the presence of amenities than by jobs themselves, there is a greater likelihood of accepting lower wages or even higher levels of

unemployment in order to maintain access to those amenities (von Reichert and Rudzitis, 1992; Deller et al., 2001). This preference signals a shift form a production to a consumption economy, where *consuming* the natural amenities in a community may become a driving economic engine in itself. In a similar vein, especially in areas that have seen high population growth, examining which economic sectors have become more or less dominant gives perspective on how and to what extent those communities may be transitioning towards the New West.

Unemployment rates measure the numbers of individuals within a community of working age who do not have work, and is an indicator of the challenges of making a living in the region. Unemployment numbers are generated by calculating the percentage of the civilian work force in a community that is not working, a result that can be skewed as it does not account for people not actually looking for work, or the effect of in- and out-migration on the size of the labor force. Unemployment numbers may reflect adverse conditions within the economy of a community, or alternately the effect that in or out migration has had within the area. For example, it is easy to assume that if, as a New West analysis suggests, people are moving to New West communities for access to amenities and quality of life concerns rather than jobs, that as more people arrive there will be less jobs available for them to find. On the other hand, if more people leave an area because there are fewer jobs, even if they move from one rural county to another, the area left will have less people looking for jobs and the area moved to will have more.

Essentially, unemployment within New West communities must take population change into account, and is an indicator of how successfully that population change is transitioning over to a more New West influenced economy. Of course, the dynamics of unemployment are not

fully explained without considering the role and sources of income in a community as well (Deller et al., 2001), which must also be considered. All in all, unemployment is an important indicator of assessing the economy of an area, and is influenced by population, economic and income characteristics.

Income

Whereas employment essentially measures the number of jobs, income indicators discern the actual amount of money that comes into and is distributed throughout a community. The nature of how income is distributed, how it is generated, and what other non-employment sources it comes from are all important demographic considerations in analyzing the makeup of a community. Income data is used to determine poverty status, to measure economic well-being, and to assess the need for social and public assistance. The income indicators that are used for this project are average per capita earnings, per capita and median family income, non-labor income, and poverty.

Income can be divided between labor and non-labor sources. Employment income includes income from wages or salaries as well as from self-employment. Income from employment is important to understand because it demonstrates which areas of the economy are drivers of other areas, and so should be focused on in maintaining a vibrant economy. Non-labor income comes from a variety of sources, including assets such as income from interest, dividends, and rent, as well as transfer payments, which include public assistance and social security. Per capita and family income measure the overall income that is generated and received on an individual and family basis.

In recent decades, non-labor income has grown rapidly as a source for total individual income, whereas income from wage and salaries has become stagnant. This is particularly the

case in some communities experiencing changes associated with New West dynamics, which include an aging population nearing or entering into retirement, stock market and investment growth, and a growing segment of the population that is footloose, including both individuals and firms. Non-labor income can be important to communities with struggling economies, both as a source of income for those facing poverty or as an alternate form of income in areas where traditional economic sectors are in decline. The growth in non-labor income can be an indicator that a place is an attractive place to live and retire. The in-migration of people who bring investment and retirement income with them can be associated with a high quality of life and good health care facilities. Non-labor income is not in itself a sign of growing affluence as it also includes transfer payments. Distinguishing between the various sources of non-labor income is important in order to obtain a clearer picture about the sources of income and its distribution throughout an area.

The Census Bureau calculates poverty rates by comparing an individual's total family income in the last 12 months with the poverty threshold appropriate for that person's family size and composition. If the total income of that person's family is less than the threshold appropriate for that family, then the individual is given designated poverty status, together with every member of his or her family (United States Census Bureau, 2012). Poverty is an indicator of the extent to which the health and resiliency of a community is challenged, both socially and economically. Examining the distribution of poverty throughout a community helps to identify where and hopefully why specific segments of the population are at a greater disadvantage than others. Poverty is correlated with a wide range of impacts on everything from health to educational attainment to civic engagement, and creates the need for a variety of services from and within a community. Childhood poverty measures the levels of poverty for individuals

under 18 years of age, and is a more specific indicator of where in a community one of the most disadvantaged and vulnerable segments of the population is located.

This chapter has examined the key indicators used in this project through the context of demographic changes associated with New West dynamics. It has also described the data sources and methods used to conduct the analysis on various socio-economic indicators, and has defined the key reference regions which are used to provide benchmarks for comparisons in the region. The next chapter presents the results of what those indicators reveal about demographic and socio-economic changes in the Clark Fork watershed over the past decade.

FINDINGS

This section presents the findings for the demographic and socio-economic indicators used in this project for the Clark Fork watershed for the decade between 2000 and 2010. Each indicator is given an explanation of why it is relevant to understanding the trends and patterns in the watershed and why it is an important consideration for understanding the impacts that growth and development patterns have on the watershed. A review of what was found in the decade between 1990 and 2000 is given in order to provide context for the current findings. Each indicator is accompanied by a discussion on the implications that the current findings have for the watershed, and how it informs us of the extent to which the watershed is transitioning between Old West and New West identities.

Many of the findings follow spatial patterns within the watershed, and for this reason there are several regions within the watershed that should be identified. These are the Highway 93 corridor, which runs north to south through the watershed, and generally includes those counties which most exhibit New West dynamics, such as access to both amenities and urban services. These are Flathead, Lake, Missoula, and Ravalli counties. The Upper Clark Fork sub-basin, which includes Silver Bow, Deer Lodge, and portions of Granite and Powell counties, exhibits more Old West dynamics and is the area that has accumulated the most environmental degradation throughout the history of the watershed from activities associated with extractive industry. Another region that shares certain patterns includes the outer regions of the watershed, including Sanders and Mineral counties to the west and Powell County to the east. This region often exhibits a mixture of Old West and New West characteristics. These regions are referred to throughout this section in order to better identify the dynamics occurring in the watershed over the past decade.

Population Characteristics

Population Growth and Decline

Justification and Context

Population growth gives an indication of expanded economic activity that is often associated with a growing population, and community well-being within the watershed. Social and economic stratification may accompany growth, along with increased development. Growth itself does not determine the pattern of development, but it does indicate what areas are experiencing increased development pressure. Regardless of development patterns, growth will stimulate greater land use and concomitant impacts on local resources. Population growth may lead to exurban development, development in the WUI (Vias and Carruthers, 2005), or adverse effects on water quality through an increase in water consumption and the proliferation of more septic systems.

Population change in the decade between 1990 and 2000 showed changes within the Clark Fork watershed that were, for a good measure, consistent with New West dynamics. As shown in Figure 1 and Table 2 in the findings section below, growth rates in six out the ten counties included in the watershed were in the double digits, and all four counties that experienced low or negative growth were located in the Upper Clark Fork basin, the area most environmentally impacted by previous activity from extractive industries. Of the counties that experienced rapid growth, all of those along the Highway 93 corridor saw at least 20 percent of their population expand during the period between 1990 and 2000. The Highway 93 corridor offers the greatest combination of natural amenities and, at the same time, proximity to urban areas. Ravalli County saw the highest percent growth rate at an astounding 44 percent, whereas

Missoula and Flathead counties had somewhat lower rates. However, Missoula and Flathead Counties saw the greatest numeric increases in population.

Findings

Based on the data from the 2010 decennial census, population growth throughout the entire watershed has slowed, in some places drastically. Figure 1 shows the numeric changes in

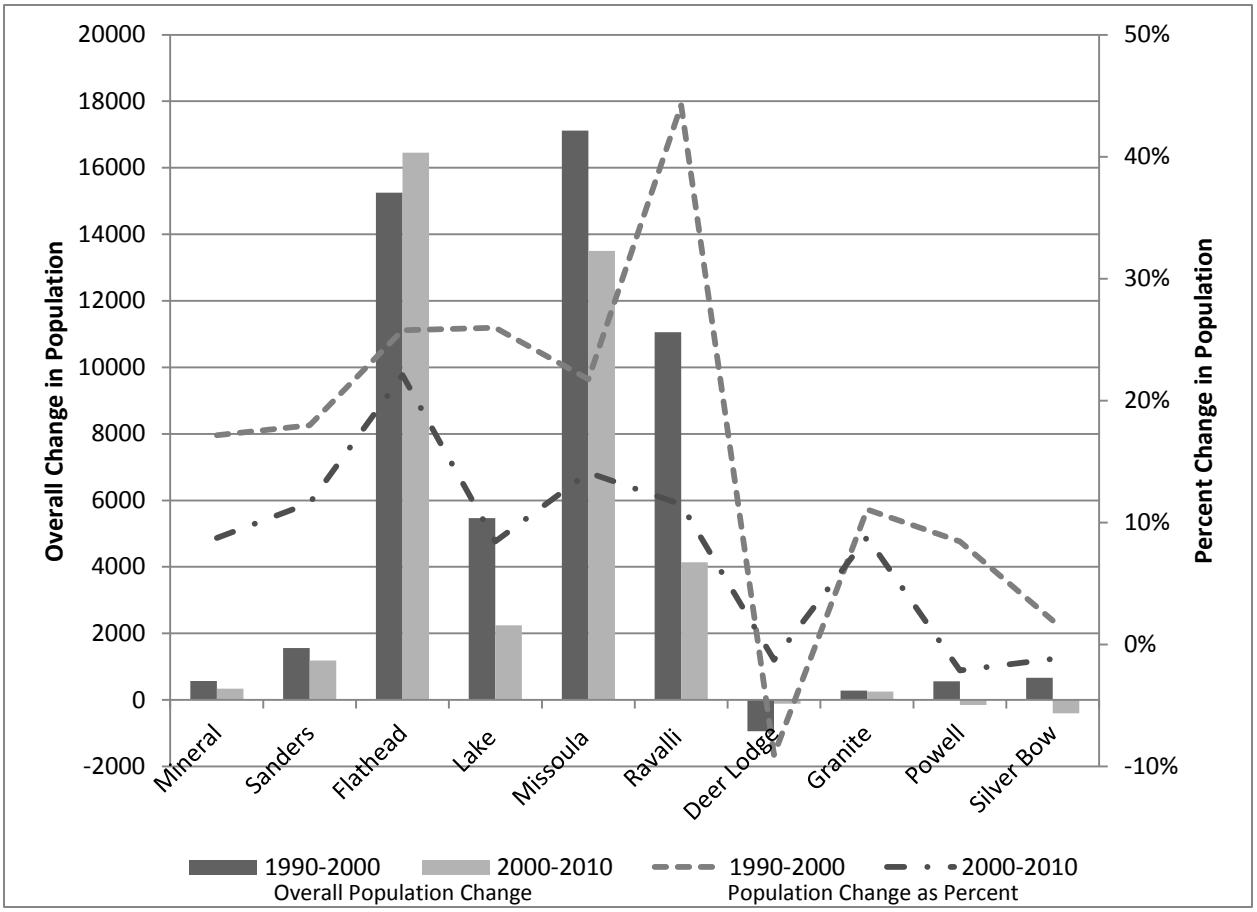


Figure 1: Change in population by county, 1990-2000 and 2000-2011
Source: United States Census Bureau, 1990a, 2000a, 2010a

population between 1990 to 2000, and 2000 to 2010, and also the percent change between those same periods. Flathead County was the county that sustained the most growth throughout the recent decade. While its population expanded by 16,457 people during the past decade, its growth rate dropped from 26 percent to 22 percent. Ravalli County, on the other hand, fell from

a 44 percent growth rate to a 12 percent growth rate. The pattern throughout the watershed is one of a general slow-down, as most counties grew more slowly, and Deer Lodge County, which had shrunk by nine percent in the decade prior, declined by a one percent growth rate in the most recent decade. Two counties, Powell and Silver Bow, reversed from positive to slight or modest negative growth rates over the recent decade.

Table 2 shows the total populations, numeric changes, and percent changes for the greater reference regions, the entire watershed, and individual counties for the years 1990, 2000, and

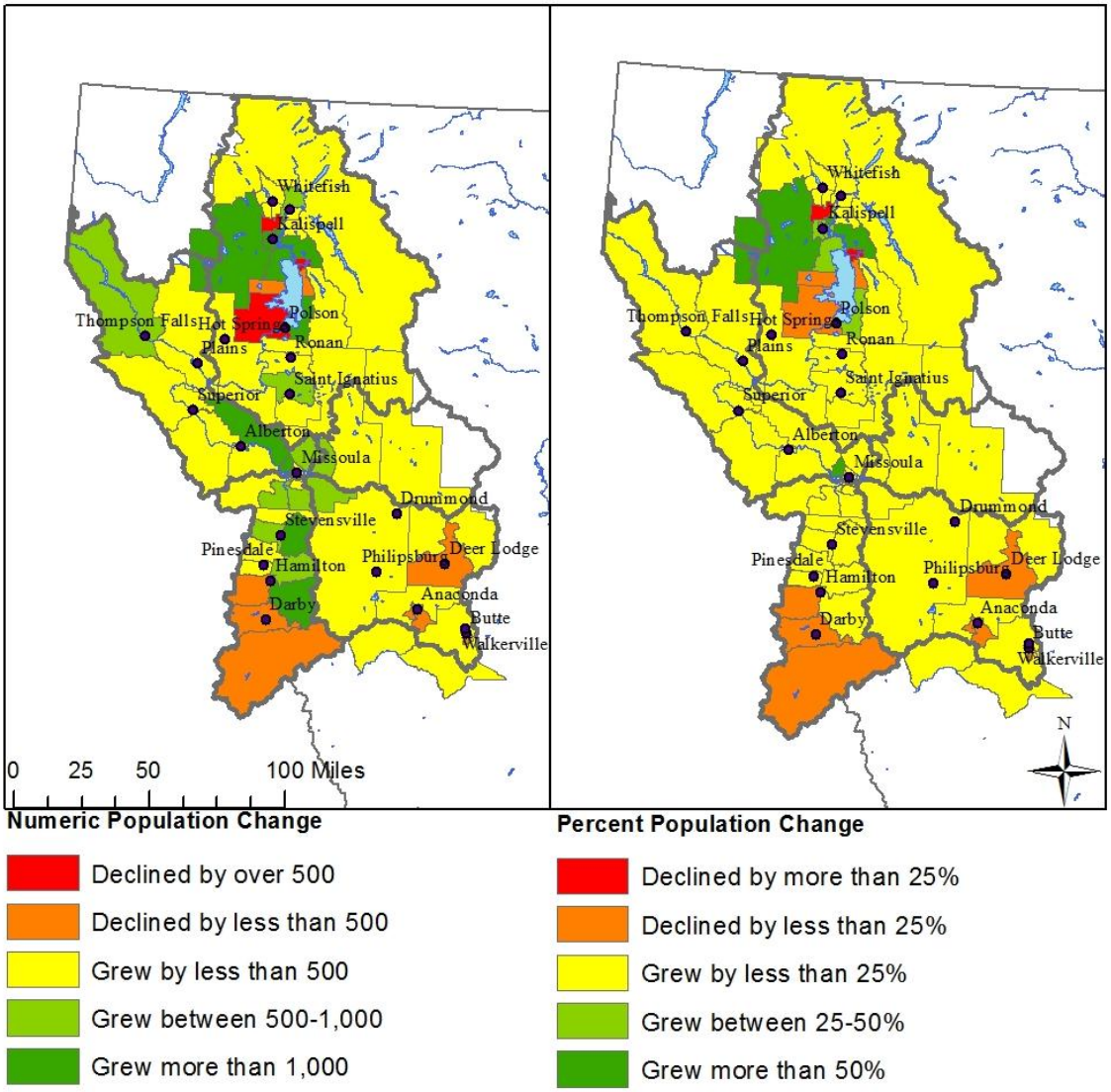
	Total Population			Overall Change in Population		Percent Change in Population	
Geography	1990	2000	2010	1990-2000	2000-2010	1990-2000	2000-2010
United States	248,709,873	281,421,906	308,745,538	32,712,033	27,323,632	13.2	9.7
Rocky Mountain Region	13,658,776	18,172,295	22,065,451	4,513,519	3,893,156	33.0	21.4
Montana	799,065	902,195	989,415	103,130	87,220	12.9	9.7
Clark Fork Watershed	249,405	300,994	338,425	51,589	37,431	20.7	12.4
Mineral	3,315	3,884	4,223	569	339	17.2	8.7
Sanders	8,669	10,227	11,413	1,558	1,186	18.0	11.6
Flathead	59,218	74,471	90,928	15,253	16,457	25.8	22.1
Lake	21,041	26,507	28,746	5,466	2,239	26.0	8.4
Missoula	78,687	95,802	109,299	17,115	13,497	21.8	14.1
Ravalli	25,010	36,070	40,212	11,060	4,142	44.2	11.5
Deer Lodge	10,356	9,417	9,298	-939	-119	-9.1	-1.3
Granite	2,548	2,830	3,079	282	249	11.1	8.8
Powell	6,620	7,180	7,027	560	-153	8.5	-2.1
Silver Bow	33,941	34,606	34,200	665	-406	2.0	-1.2

Table 2. Total population and population change within the watershed
Source: United States Census Bureau, 1990a, 2000a, 2010a

2010. It shows that the rates of growth in 2010 for all counties in the watershed were less than in 2000, but that in combination the two most recent decades have seen considerable population growth for most counties within the watershed. Notably, the combined population growth in Missoula and Flathead Counties together accounted for 80 percent of the total population growth

in the watershed. In comparison to the greater reference regions, the population in the watershed grew at a greater rate than both the United States and Montana, but considerably less than the Rocky Mountain region.

Map 5 displays the change in population between 2000 and 2010 at the census tract level,



Map 5: Numeric and percent population change in the watershed, 2000-2010
Source: United States Census Bureau, 1990a, 2000a, 2010a , Census Tract Level

which provides a more detailed look at the spatial distribution of the population change in the region. Although at a more detailed scale it is apparent that the Missoula and Flathead County areas were where higher growth numbers occurred, some other characteristics become apparent

as well. For one thing, almost all of the watershed saw some extent of population growth during the past decade. The most notable areas that saw population decline were on the peripheries of the Bitterroot and Upper Clark Fork sub-basins, and individual tracts in or around the more urban centers of Missoula and Flathead Counties.

Implications

The population of the watershed continued to grow during the past decade, though at a slower pace than the previous decade for most of the region. In the case of some counties, such as Ravalli, it has slowed dramatically. The only counties that showed growth more or less consistent with the 1990's were Flathead and Missoula Counties. Interestingly, both Ravalli County and Flathead Counties can be considered areas with high natural amenities and share qualities associated with changes caused by New West dynamics, even though between 2000 and 2010 they demonstrate different patterns of population growth. Also interestingly, although Flathead County saw the greatest increase in population, it also contained individual census tracts that saw the most dramatic population loss in the watershed.

In the Upper Clark Fork sub-basin, three out of four counties showed population decline between 2000 and 2010, where between 1990 and 2000 only one county in that area actually lost population. On the other hand, that one county, which showed a population decline of -nine percent between 1990-2000, slowed down to only -one percent in the past decade. The population decline in the Upper Clark Fork basin is in stark contrast to the Lower Clark Fork basin, especially that area in and to the west of the city of Missoula. This area saw considerable population gain during the past decade.

Because the data used for definitive population counts relies on the decennial census, it is difficult to ascertain how much of a role the current recession played in these lower population

growth numbers. It could very well be that the slow-down in population growth in the area matches the unfolding of the recession. If that is the case, it could also be that the recent slow-down is even more drastic than what is currently shown, and that the last three years of the decade might have significantly impacted dynamics in the Clark Fork watershed.

Growth and Decline in Incorporated versus Non-incorporated Areas

Justification and Context

Exurban development patterns create important impacts on natural resources in the region. One way to measure the extent of that exurban development is looking at growth inside and outside of incorporated areas. Development patterns in non-incorporated areas tend to be more sprawling and exurban in character (Travis, 2007; Jarvis, 2008). Unincorporated areas often have less stringent land use policies and regulations, which allow for greater flexibility and inconsistency in how newer developments consume and interact with the environment. Similarly, as services are not easily provided to exurban areas, both in terms of infrastructure and health and safety services, development in unincorporated areas creates an increased fiscal burden on municipalities (Jarvis, 2008).

Growth in unincorporated areas can have important consequences for water quality (Jarvis, 2008). The most pertinent way in which this affects the watershed is that non-incorporated areas are typically not connected to municipal sewer systems and water lines. In areas that do not implement land use planning, which includes most unincorporated areas in the watershed, state regulations allow for any minor subdivision to go through the approval process without completing an environmental assessment. A high proportion of development outside of the city limits is done through minor subdivisions, and often means that rather than connecting to existing city sewers, they rely upon individual septic systems. Similarly, developments in

unincorporated areas typically rely on individual wells as a water source, as developments which utilize 35 gallons per minute or less are exempt from needing to apply for water rights. This can be problematic in trying to account for overall water consumption in the basin. Though comparing growth between incorporated and unincorporated areas does not distinguish between minor or major subdivisions, it is an indicator of what type of development patterns are potentially occurring.

Rates of growth in incorporated and unincorporated areas over the last several decades highlight the extent to which growth in unincorporated areas occurred during the 1990's. As is shown in table 3 in the findings section below, between 1970 and 2000, growth in incorporated and unincorporated areas throughout the watershed happened at almost exactly the same rate (48 percent and 47 percent respectively.) However, between individual counties in the watershed, those rates varied greatly. For example, during the same period, Flathead County saw a 125 percent growth rate in its unincorporated areas versus a 39 percent rate in its incorporated areas, and Ravalli County saw 179 percent growth in unincorporated areas versus 74 percent in incorporated (United States Census Bureau, 1990a, 2000a, 2010a). Both of these counties saw higher growth rates in unincorporated areas than incorporated areas as well during the decade between 1990 and 2000. The only county in the watershed that saw dramatically less growth in unincorporated areas over incorporated areas throughout both time periods was Missoula County. The watershed as a whole saw a growth rate of 25 percent between 1990 and 2000 in unincorporated areas, and a growth rate of 16 percent in incorporated areas.

Findings

Population growth throughout the watershed increased in incorporated areas at the same rate as it did in unincorporated areas over the last decade. The overall growth rate since the

1970's until the present shows equal rates of population growth as well between incorporated and unincorporated areas. However, broken up into decadal measurements, growth in incorporated areas was faster than unincorporated up until the 1990's, when growth in unincorporated areas outpaced growth in incorporated areas by almost double. In the last decade however, growth within the watershed was 12 percent in both incorporated and unincorporated areas.

Distinguishing growth throughout the watershed as a whole conceals some of the dynamics occurring at the county level. For example, in 1977 the counties of Deer Lodge and Silver Bow consolidated their city and county governments, which for the purposes of this indicator, boosts population numbers for incorporated areas within the watershed. After removing Silver Bow and Deer Lodge from the calculations for the watershed area (as it is impossible to distinguish between incorporated and unincorporated areas in those counties due to their consolidation), the numbers provide a somewhat different result, which are displayed in Table 3. Taking away the consolidated counties brings the population growth rates to even

	Population in 2010		Population Growth Rate as Percent					
	Total	%	1970-1980	1980-1990	1990-2000	2000-2010	1970-2000	1970-2010
Watershed Total	338,425		19	3	21	12.4	48	66
Incorporated	163,955	48	22	4	16	12.1	47	65
Unincorporated	173,795	51	16	2	25	12.3	48	66
Watershed Total (*minus Silver Bow & Deer Lodge Counties*)	294,927		31	7	25	14.8	76	102
Incorporated *(minus Silver Bow & Deer Lodge Counties*)	121,132	41	9	15	25	18.5	57	86
Unincorporated (*minus Silver Bow & Deer Lodge Counties*)	173,795	59	49	2	25	12.3	91	114

Table 3. Growth rates in incorporated and unincorporated areas by decade
Source: United States Census Bureau, 2000a, 2010a ; Montana Department of Commerce, 2012

levels for the period of time between 1990 to 2000, and shows incorporated areas again growing faster than unincorporated areas during the most recent decade. It also brings into focus the rapid pace of growth that occurred in unincorporated areas during the 1970's, and the fact that more individuals live in unincorporated areas in the watershed than in incorporated ones.

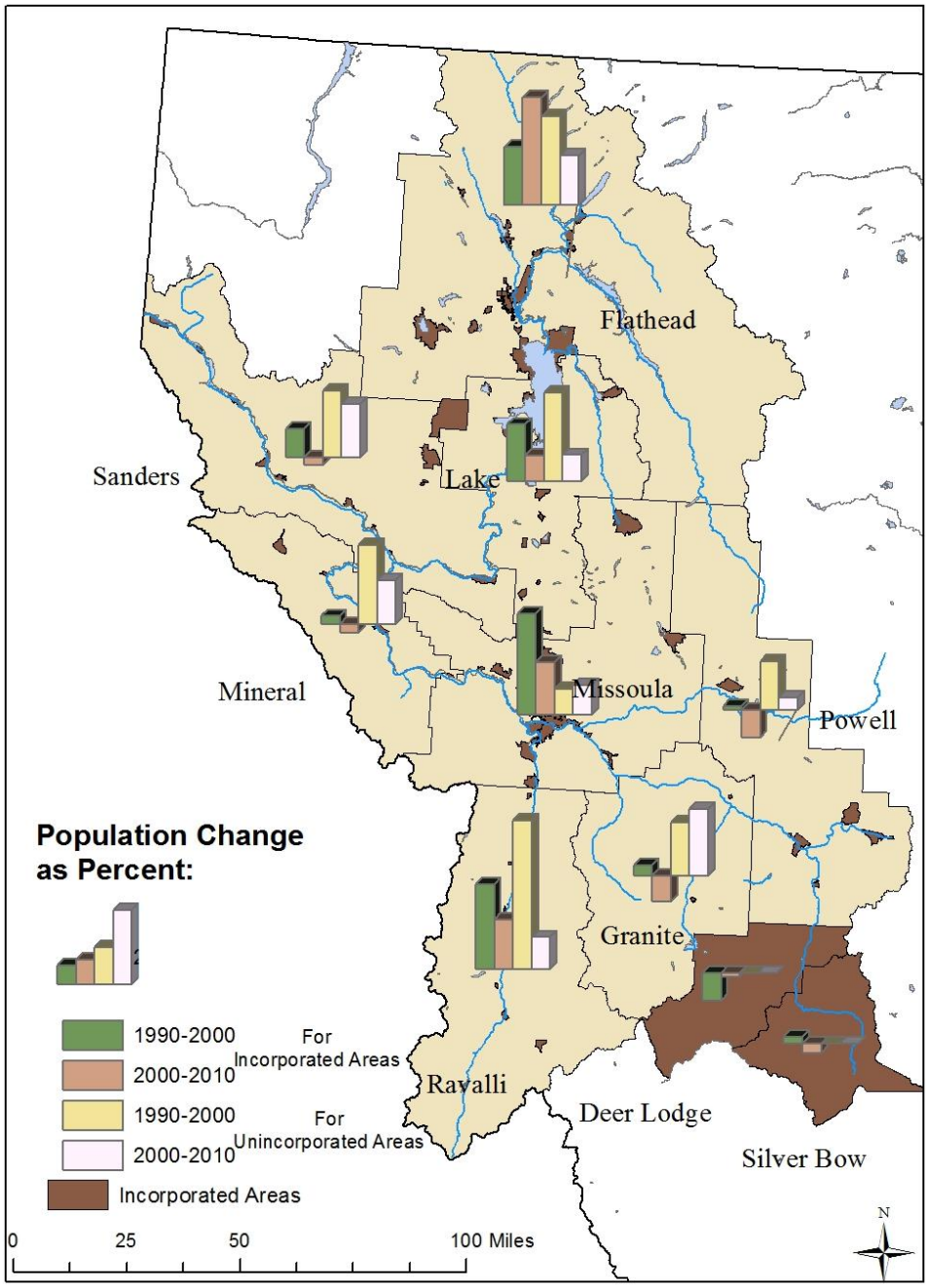
Breaking down the watershed by county brings other considerations into focus with regard to the most recent decade. For the most part, growth rates declined in both incorporated and unincorporated areas by county. Only Flathead County saw an increased growth rate in its incorporated areas, and Granite and Missoula counties had slight increases in their growth rates in unincorporated areas. Several counties, however, showed change from positive to negative growth rates in incorporated areas while maintaining positive, and in some cases substantial, growth rates in unincorporated areas. Map 6 and Table 4 illustrate these county dynamics.

	Incorporated Areas		Unincorporated Areas	
County	1990-2000	2000-2010	1990-2000	2000-2010
Mineral	2.6	-2.8	25.8	14.3
Sanders	9.4	-2.5	21.9	17.4
Flathead	19.1	35.2	29.0	16.3
Lake	18.4	8.4	28.7	8.5
Missoula	32.9	17.1	8.3	9.7
Ravalli	27.7	16.2	48.6	10.4
Deer Lodge	-9.1	-1.3	NA	NA
Granite	3.6	-8.4	17.6	22.0
Powell	1.3	-9.1	15.9	4.2
Silver Bow	2.0	-3.1	NA	NA

Table 4. Growth rate between incorporated and unincorporated areas by county by decade, 1990-2010
Source: United States Census Bureau, 1990a, 2000a, 2010a

Implications

Patterns of population growth and decline between incorporated and unincorporated areas shifted noticeably throughout the watershed in the last decade. The counties that saw the most growth in the past several decades, primarily those along the Highway 93 corridor where there is access to natural amenities as well as proximity to urban services, all show higher growth rates in



Map 6: Population growth rate for incorporated and unincorporated areas by county
Source: United States Census Bureau, 1990a, 2000a, 2010a

incorporated areas than in unincorporated. In the most extreme case, Flathead County essentially reversed its trend from the prior decade of growing primarily outside of its incorporated areas during the 1990's. Between 2000 and 2010, Flathead grew in its incorporated areas at a rate more than double the rate it saw in unincorporated areas. Ravalli County also showed a higher

growth rate within its incorporated areas than in unincorporated areas. Where growth is located has important implications for the intensity of dispersed, exurban development patterns that are associated with New West dynamics and which can create significant impacts on the watershed.

The higher growth rates within incorporated areas may be a sign that development patterns within the watershed are becoming more dense and concentrated, possibly due to changing values and living preferences, increased awareness of the adverse impacts of sprawl, and decreased wealth and asset values due to the recession, which would make buying a second home or moving to exurban locations for retirement more difficult. It is also highly likely that the amount of area that is incorporated within the watershed has increased. Specifically, the greater urban areas, especially those in Missoula and Flathead Counties, have annexed some of their surroundings during the past decade. Additionally, there is the likelihood that, due to the amount of growth that occurred in the 1990's, the price of land in the watershed has increased, which tends to influence clustering rather than allow for further sprawl (Alonso, 1964).

Outside of the Highway 93 corridor a different dynamic occurred between 2000 and 2010. Every county in the watershed other than those along the Highway 93 corridor experienced negative growth rates in their incorporated areas, while at the same time showing no negative growth rate in unincorporated areas. This is less helpful for Silver Bow and Deer Lodge Counties, as they consolidated in 1977, but for the rest of the counties in the watershed experiencing this phenomenon, it raises important questions about what type of development is occurring, who is motivating that development, and what events have affected how these communities are managing and planning for their changing demographics. Specifically, towns in these more sparsely populated counties wither while more exurban and dispersed growth continues to occur at consistent rates. Alternatively, it may be that these peripheral parts of the

watershed are in a different stage of transitioning towards the New West, lagging behind the more populous areas of the watershed, which would explain their continued and increased development of a more exurban nature.

Age

Justification and Context

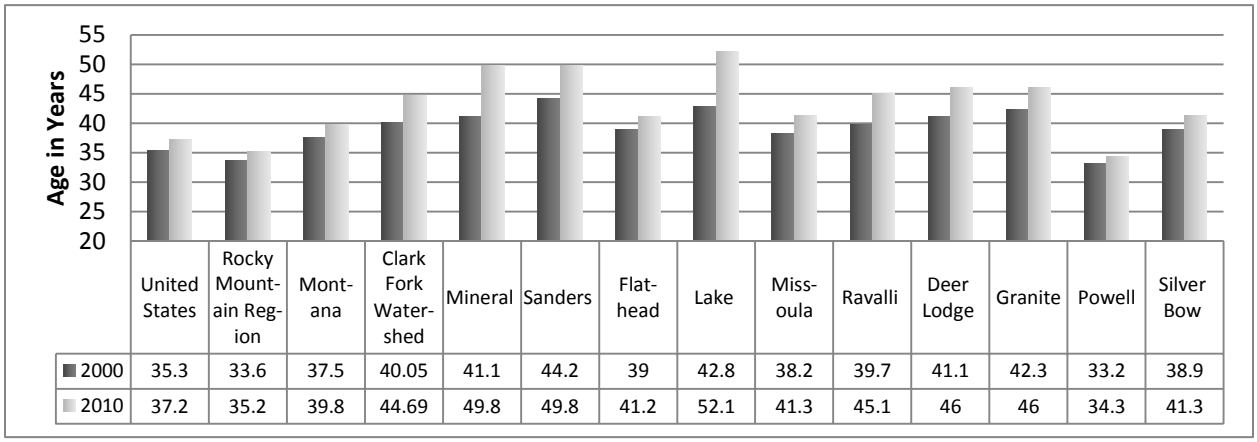
The age makeup of a community has far-reaching implications, both societally and with regard to resource consumption and development patterns. Varying stages of life bring about varying needs and wants, and so different age cohorts have different impacts on a community. Baby boomers gearing up for or entering retirement will desire cultural and recreational opportunities, and also require increased access to health care services and generate different transportation and housing needs than younger age cohorts, such as those who are just beginning families of their own. Many expect aging people, as they become "empty nesters" who have less need for a larger home for their family, and increased interest in ease of access to services and decreased energy costs, to seek out housing nearer to urban infrastructure. On the other hand, many of the in-migrants moving to the watershed area come seeking the peace and solitude associated with the region, and bring demands for more dispersed, exurban development. Measuring a changing age composition is an important gauge of how the changing population could impact the watershed.

As of 2006, Montana ranked in the top five states by percent of baby boomers (Swanson, 2006), and the last *State of the River Report* showed that the Clark Fork watershed overall had a higher median age than the rest of Montana, the Rocky Mountain region, and the U.S. as a whole for the decade between 1990 to 2000. During that decade, the age range for baby boomers was 40 to 54 years old, and that shifted in the most recent decade to 50-64. Between 1990 and 2000,

age cohorts in the watershed representing baby boomers grew more rapidly than any other segment of the population, which mirrored trends in the Rocky Mountain region and in the country as a whole. The baby boom "bubble" is "echoed" by the age cohorts that are typically thought of as kids of the baby boomers. Assuming that baby boomers typically had children between eighteen to thirty years of age, during the 1990's the echo generation included people between their late teens and early thirties, and for the most recent decade people between their mid-twenties to early forties (Swanson, 2006). Both of these bubbles saw growth in the Clark Fork watershed between 1990 and 2000.

Findings

The population composition of the watershed continues to age overall. Every single county in the watershed had a higher median age in 2010 than in 2000, as is illustrated in Figure 2 below. Figure 3 shows a more detailed distribution of age for the combined area of the



	United States	Rocky Mountain Region	Montana	Clark Fork Watershed	Mineral	Sanders	Flathead	Lake	Missoula	Ravalli	Deer Lodge	Granite	Powell	Silver Bow
2000	35.3	33.6	37.5	40.05	41.1	44.2	39	42.8	38.2	39.7	41.1	42.3	33.2	38.9
2010	37.2	35.2	39.8	44.69	49.8	49.8	41.2	52.1	41.3	45.1	46	46	34.3	41.3

Figure 2: Median age in reference regions, the watershed, and counties for 2000 and 2010
Source: United States Census Bureau, 2006-2010h

watershed. From 1990 to 2000, and 2000 to 2010 there was a surge in the baby boomer age cohorts. A second, smaller wave can be seen in individuals now in their late teens to mid-twenties. This correlates more or less with the "echo" generation, though there were higher numbers in younger age cohorts than might be expected. A much smaller cohort can be seen

between those corresponding with the baby boomer and echo generation, and an equally small cohort can be seen in the ages including children and teenagers. An exception to this is that the cohort including individuals younger than five years old rose during this decade as a result of more people of prime child bearing age in the past decade.

Table 5 shows which age cohorts were most represented by 2010, which cohort saw the biggest increase over the past decade, and what the rates of change were for different age categories for and within the watershed. The age categories used include baby boomers, or individuals between 46 and 64 years of age in 2010, the echo generation, or individuals between 22 and 40 years of age in 2010, and seniors, or individuals over 65 years of age in 2010. Table 5 does not include greater reference regions beyond the State of Montana in order to focus more specifically upon the study area. Amongst all of the counties in the watershed, only Missoula

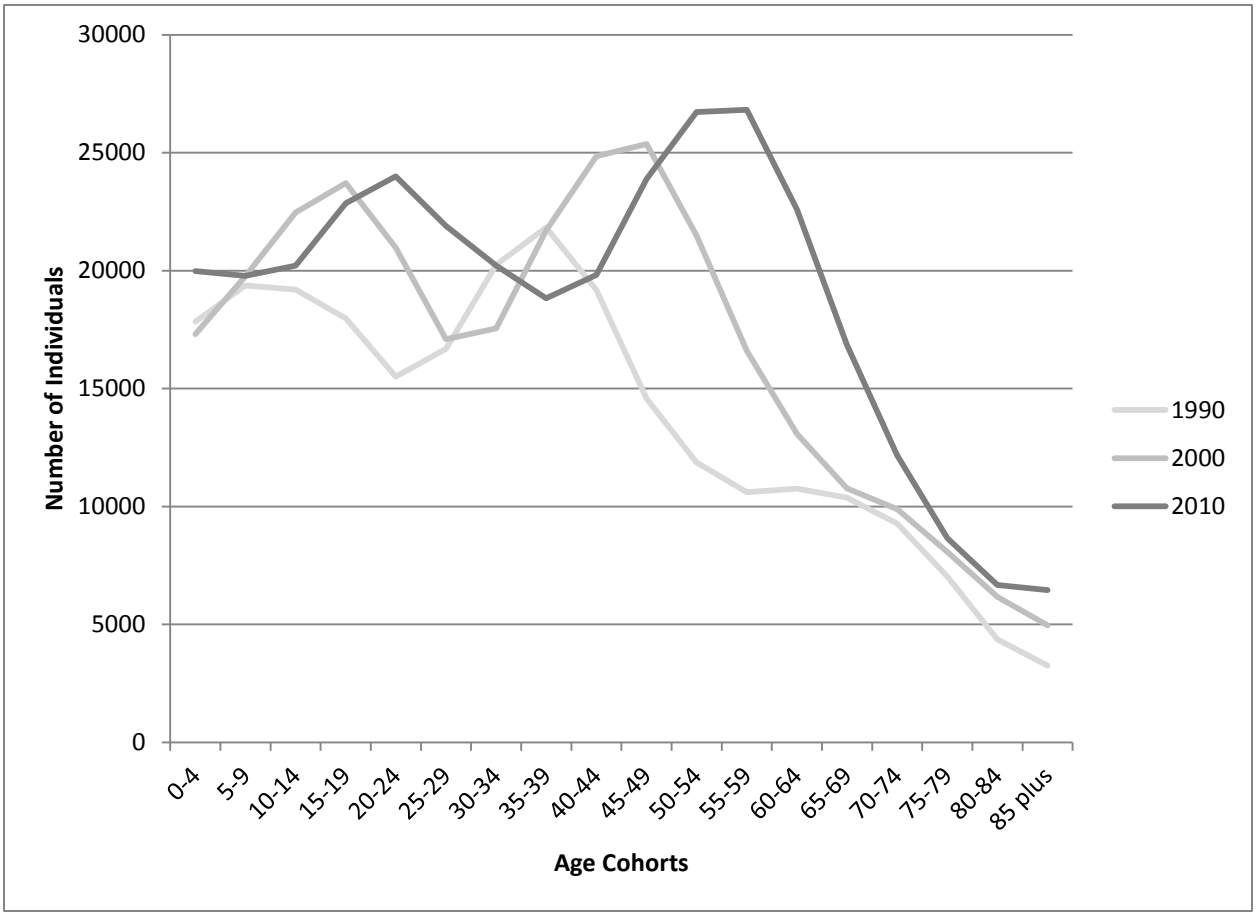


Figure 3: Population distribution throughout the watershed by age cohort, 1990, 2000, and 2010
Source: United States Census Bureau, 1990b, 2000e, 2010c

County's largest age cohort did not correlate with baby boomers. The only counties in the watershed that did not see the greatest percent of population growth in baby boomer age cohorts were Mineral and Sanders County. Mineral County had the biggest percent change in individuals over 85 years of age, but saw the greatest number of individuals added in the 65-69 age cohort, which is just past the classification for the baby boomer generation for the last decade. Sanders

			By Age Group		% Change of Demographic Cohort			
County and Region	Total Population in 2010	% Change, 2000-2010	Largest Group	Largest % Increase	Echo	Boomer	Over 65	Under 18
Montana	989,415	9.7	50-54	60-64	9.2	37.0	20.0	-2.8
Clark Fork Watershed	329,127	12.4	55-59	60-64	11.1	38.2	25.0	-1.1
Mineral	4,223	8.7	55-59	85+	-10.8	31.9	64.6	-19.5
Sanders	11,413	11.6	55-59	65-69	6.9	25.9	37.9	-3.2
Flathead	90,928	22.1	50-54	60-64	22.8	51.7	33.1	10.2
Lake	28,746	8.4	50-54	60-64	5.2	30.6	22.8	-2.1
Missoula	109,299	14.1	20-24	60-64	15.8	44.3	27.2	-0.4
Ravalli	40,212	11.5	55-59	60-64	2.5	31.1	33.8	-4.4
Deer Lodge	9,298	-1.3	55-59	55-59	1.5	22.9	0.3	-17.2
Granite	3,079	8.8	55-59	65-69	-15.8	34.0	60.0	-23.6
Powell	7,027	-2.1	45-49	55-59	-9.0	29.6	9.7	-20.1
Silver Bow	34,200	-1.2	50-54	55-59	-3.2	23.6	0.7	-12.4

Table 5. Population growth rates and age by cohort and category
Source: United States Census Bureau, 1990b, 2000e, 2010c

County's highest rate of change was in this cohort as well. The 2000 census indicated that the largest age cohorts in two of the counties in the watershed, Granite and Lake Counties, were in the 10-14 years old range, which was corroborated by the *State of the River Report*. In this past decade, both of those counties showed negative population growth in those age cohorts, and saw the largest increase of any one cohort occur amongst baby boomers.

The numbers for population growth rates for the echo generation are noticeably lower than for the baby boomer generation. Similarly, population growth rates were lower for

individuals over 65. The watershed as a whole shows a percent change for the echo generation of 11 percent, but this is mainly because growth in those age cohorts was higher in Flathead and Missoula Counties, which share the bulk of the population in the watershed. No other county had percent change rates in the echo generation cohorts that were beyond single digits. Meanwhile, although Flathead County had a rate of change of 23 percent for the echo generation, it had rates of 52 and 33 percent, respectively, for baby boomers and individuals over 65.

Implications

The population of the Clark Fork watershed became noticeably more aged in the past decade. While growth in the age cohorts that correlate with the baby boomer generation was consistently strong in all counties throughout the watershed, change in the size of the "echo" generation were variable throughout the region. There numbers of individuals in the age cohorts between these two dominant aging trends maintained noticeably smaller number of individuals, which was also the case for individuals under 18 years of age. Add to that the strong and consistent numbers in age cohorts for individuals over 65 years of age, and it is readily apparent that the overall age composition of the watershed is slanted heavily towards individuals in the older age cohorts.

The age composition of the watershed raises a number of important issues, especially regarding how a sizable and growing baby boomer cohort will affect the types of services and communities which are found in the watershed. This is especially relevant for the changing New West dynamics, as baby boomers are thought to play a prominent role in the transition to a New West. However, the diminished wealth brought on by the current recession may be challenging some of these dynamics with the potential to slow or even halt the watershed from moving towards a New West.

Housing Characteristics

Housing characteristics provide social indications of the well-being in a community as well as an important measure of the extent to which development is occurring in the watershed. Social housing indicators help to calculate whether the financial cost of living is supported by a community's economy, and whether a community is accessible to its residents. Looking at the extent of housing development helps determine how land use is affected by population growth, and whether development patterns tend to occur in more ecologically vulnerable or sound areas of the watershed.

Data is available for the number of housing units from both the decennial census and the ACS. The numbers that are derived between these two sources do not always match up, and generally it seems that the census counts tend to show greater numbers than the ACS by up to five percent. As this is not a big difference, both data sources can be used as both provide different types of information. The Census Bureau provides data on which units are occupied and vacant, and further information about tenure and seasonal use. The ACS provides information on the age of housing stock, and is compatible with other demographic indicators contained in the ACS, which gives the ability to relate housing data to other pertinent socio-economic indicators. In this section, census data are used for identifying housing density, occupancy and tenure characteristics, and seasonal housing indicators, and ACS data are used for capturing new construction and housing affordability measures.

Housing Density

Justification and Context

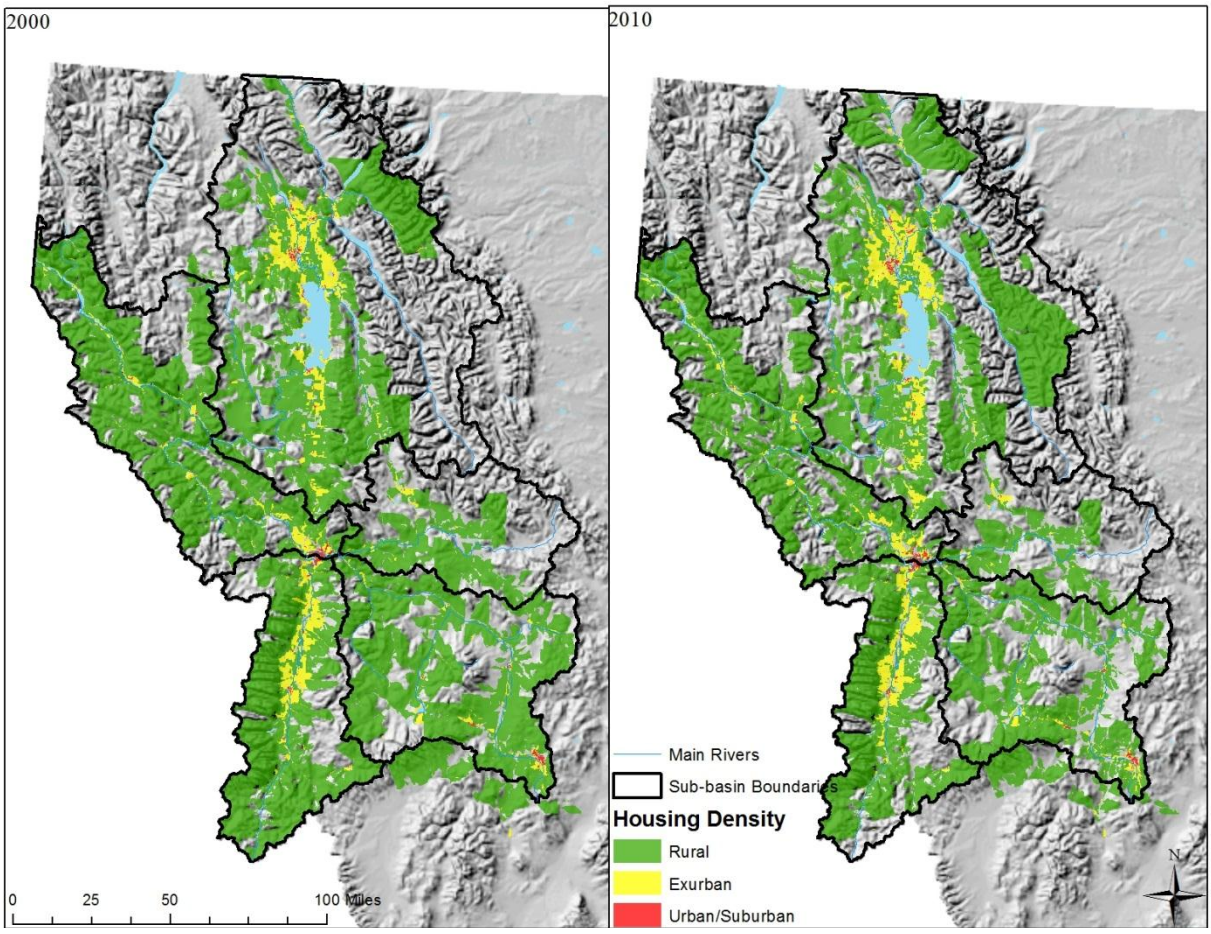
Examining residential density patterns throughout the watershed helps to identify where land use and development patterns are concentrated or dispersed. Certain types of development

may affect the appeal of the natural amenities that attract new population growth to the area in the first place. Less efficient development patterns, or sprawl, have adverse ecological impacts such as habitat fragmentation, increased negative human-wildlife interactions, vulnerability to wildfires, and disproportionate and adverse impacts on water quality. Research has shown that the extent of land area throughout the country consumed by exurban development, which is measured as between 1.6 and 40 acres per unit, is considerably more than urban areas, and also that such development consumes more natural resources than denser development on a per capita basis (Theobald, 2005). Considering that most of the land in the watershed that is available for development is in the riparian areas of the river basin, exurban development creates the potential for harmful impacts to water quality in the watershed. As such, pinpointing where and what kind of development is occurring spatially throughout the watershed then is important.

The previous *State of the River Report* showed most development in the watershed occurring along the Highway 93 corridor. Housing density was greatest in the urban areas of Missoula, Kalispell and Whitefish, as well as some smaller towns such as Polson and Hamilton. The spatial distribution of population densities followed the geography of the region, occurring mainly in valley bottoms and along rivers. This distribution also followed access to natural amenities, most obviously with regard to having proximity to Glacier National Park in Flathead County, but also occurring along the borders of private land with the region's national forests.

Findings

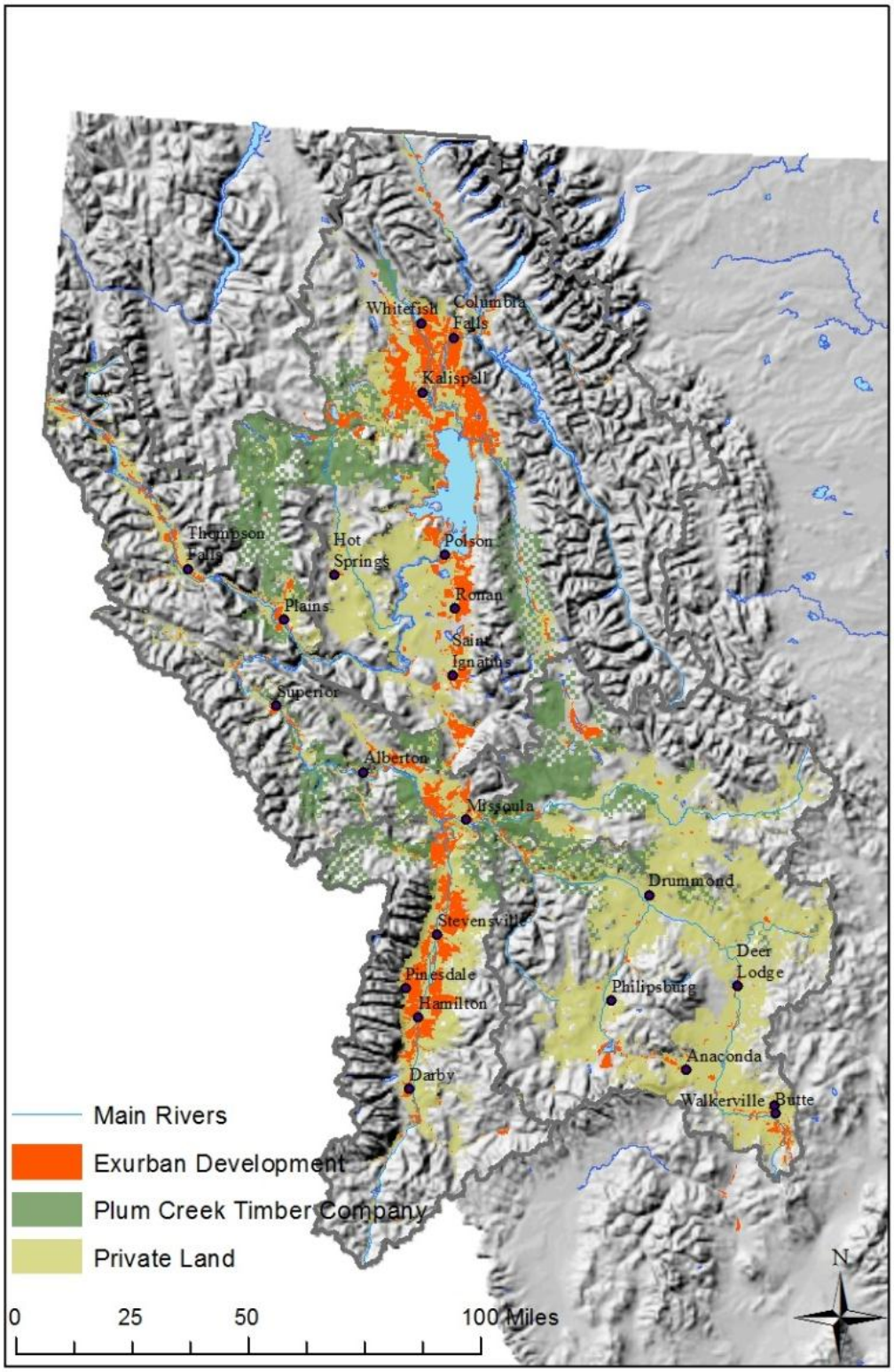
Map 7 displays the distribution of housing density throughout the watershed in 2000 and 2010. The map is set at the census block level, and only presents those areas which have actual population values. The map is divided between urban/suburban, exurban, and rural density values following the lead of Theobald (2005), where urban density is greater than 1.6 acres per



Map 7: Housing density in the watershed: 2000 & 2010
Source: United States Census Bureau, 2000c, 2010b, Block Level

housing unit, exurban density it between 1.6 and 40 acres per unit, and rural density is greater than 40 acres per unit. For sake of comparison, there are 640 acres in a square mile, so one square mile would fit at least 400 urban housing units, as opposed to potentially only 16 exurban housing units.

Map 7 reveals that in 2000, 772 square miles of the watershed were taken up by exurban development, whereas in 2010, 944 square miles were exurban. This results in a 23 percent growth rate for exurban development in the watershed over the past decade. In comparison, the urban growth rate in the past decade was 22 percent. However, the area of the watershed



Map 8: Exurban development and total private land in the watershed, 2010
Source: United States Census Bureau, 2010b, Block Level; Theobald (2005)

qualifying as having urban density in 2000 was only 50 square miles, which in 2010 had risen to 61 square miles. Although the growth rates for urban and exurban housing densities were about the same, far more land area was consumed by exurban development over the past decade. Land consumed by exurban development over the decade was 172 square miles, versus the 11 new square miles of urban development, which means that exurban development expanded fifteen times faster than urban development.

Map 8 illustrates the distribution of exurban development in relation to that of private land throughout the watershed. As a note, the distribution of private land also corresponds with the topology of the watershed, as much of the land that is publicly owned is steep, mountainous terrain that is not well suited to development. This is important as the amount of private land is relatively limited in comparison to the total area of the watershed, especially in some specific sub-basins such as the Lower Clark Fork. Additionally, private land that is in proximity to the types of natural amenities and urban services that are hallmarks of changes associated with the New West is in even shorter supply. It is notable that in the Flathead and Bitterroot sub-basins, a considerable portion of the private land area has already been developed. Much of the private land in the watershed is located in the Upper Clark Fork sub-basin, which has seen some of the lowest population growth over recent decades.

Implications

Exurban development is an important factor of growth and development associated with the New West. Because of its dispersed, low-density, high-impact nature, it is especially important to gauge the extent to which exurban development is happening in the region (Theobald, 2005). The tendency towards sprawl that exurban development exhibits means that growth rates which are already high for these rural settings see an even more inordinate effect on

the landscape (Vias and Carruthers, 2005). During the 1990's, areas that are considered exurban experienced the fastest growth rates in the country (Cromartie and Wardell,1999). In the Clark Fork watershed area, this exurban development trend continued in the most recent decade. The development in the watershed increased in areas with exurban housing densities at a rate fifteen times greater than in urban/suburban areas over the past decade. With regard to the effects that New West dynamics have on land use in comparison to those from the Old West, the findings here suggest that rapidly expanding, low-density residential development may be a lasting legacy of growth associated with the New West.

New Construction

Justification and Context

An important step in analyzing housing indicators is to understand what changes have occurred in the housing stock, or the number of new housing units, in a community. Housing construction is a sign of overall development in a community, and connotes that growth is most likely occurring or at least expected to be. Construction is traditionally an economic sector that local communities consider a bellwether for overall economic and demographic stability and expansion. Measuring how new construction matches up with occupancy and vacancy rates, which are discussed below, provides insight into whether development in a community is at a pace with population change. Similarly, examining the spatial distribution of new housing provides an understanding of what impacts new development may have on the area making up the watershed, and whether new construction continued to follow New West development patterns between 2000 and 2010.

In general, the greatest construction boom in the watershed occurred in the 1970's (Clark Fork Coalition, 2005). The next decade that saw the most construction was between 1990 and

2000, which correlates with the jump in population numbers during that decade as well. Although, as discussed below, the decade between 2000 and 2010 saw slightly less construction than the decade before, the two decades together saw more construction in the watershed than any other two consecutive decades before them. This provides a context of essentially a two decade housing boom, which means that a significant amount of construction and development has occurred in the watershed over the past two decades. This section explores where that development occurred, and whether the development during the last two decades may have led to a housing surplus that outpaced demand.

Findings

Table 6 displays 2010 housing stock and the proportions of total housing stock for the greater reference regions, the watershed, and individual counties for housing built during the housing boom that occurred during the last two decades. Additionally, it focuses in on the proportion of housing units built during the most recent decade, and in an attempt to capture the effects of the 2008 recession on housing construction, displays the proportion of housing units built in 2005 or later. Besides the Rocky Mountain region, which saw even rates of new construction in the 1990's and the 2000's, all regions from the country as a whole to the State of Montana to the watershed saw less new housing between 2000 and 2010 than during the 1990's. In the Clark Fork watershed as a whole, 44 percent of the housing construction that occurred in the last two decades happened between 2000 and 2010. More tellingly, of the construction that occurred between 1990 and 2010, only 14 percent of it happened in 2005 or later. This pattern holds for counties in the watershed on an individual basis. No county saw more than half of the construction in the past two decades occur between 2000 and 2010.

Geography	Total Housing Units	Total Housing Units, 1990-2010	Percent of Housing Stock Built between 1990-2010	Percent of 1990-2010 Housing Stock Built After 2000	Percent of 1990-2010 Housing Stock Built 2005 or Later
United States	130,038,080	34,872,791	26.8	47.5	15.1
Rocky Mountain Region	9,312,594	3,686,060	39.6	49.6	15.9
Montana	471,723	125,934	26.7	44.3	15.0
Clark Fork Watershed	156,468	53,070	32.1	43.8	13.9
Mineral County	2,364	623	26.4	29.5	9.3
Sanders County	6,434	1,745	27.1	36.0	13.2
Flathead County	44,940	17,162	38.2	48.4	17.7
Lake County	16,089	5,344	33.2	37.0	9.4
Missoula County	48,931	16,927	34.6	47.6	13.9
Ravalli County	19,002	7,519	39.6	38.3	10.1
Deer Lodge County	5,113	508	9.9	34.1	16.3
Granite County	2,679	603	22.5	41.5	13.4
Powell County	3,079	525	17.1	28.0	6.7
Silver Bow County	16,635	2,114	12.7	30.1	10.2

Table 6. Total housing units in 2010, new construction between 1990 and 2010
Source: United States Census Bureau, 2006-2010e

Table 6 also presents a picture of uneven development throughout the watershed area at a county level. The counties in the Upper Clark Fork sub-basin all saw much lower levels of construction in the past two decades, with all four counties seeing less than 25 percent of overall housing stock built between 1990 and 2010.

Figure 4 makes clear the extent to which new construction tapered off at the end of the decade between 2000 and 2010. Although almost all counties in the watershed saw less new construction in the watershed in the last decade, every county saw a considerable drop in the amount of new construction after 2005. To be more clear, if the rate of construction had stayed even, the period after 2005, or the last quarter of a twenty year period, would show roughly a quarter of total construction for that period. However, only two counties show rates higher than 15 percent, and five show rates of ten percent or less. Especially notable are those counties with

higher amounts of housing stock, such as those in the Highway 93 corridor, as these are areas where the construction sector has played a significant role in the economy.

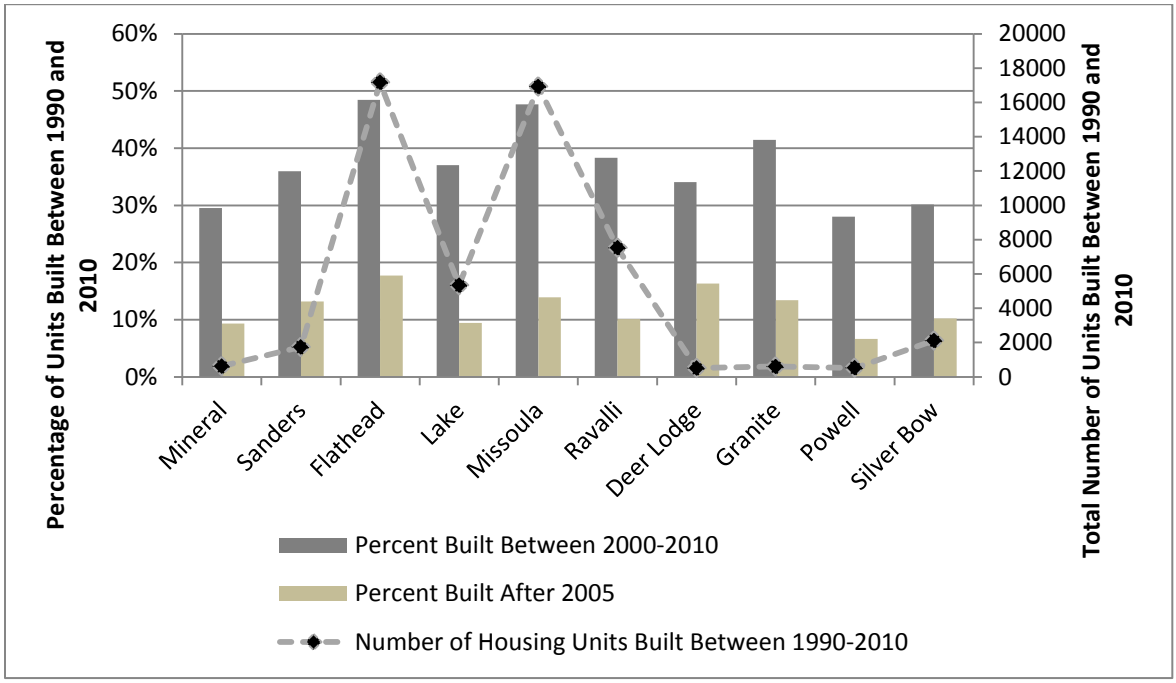


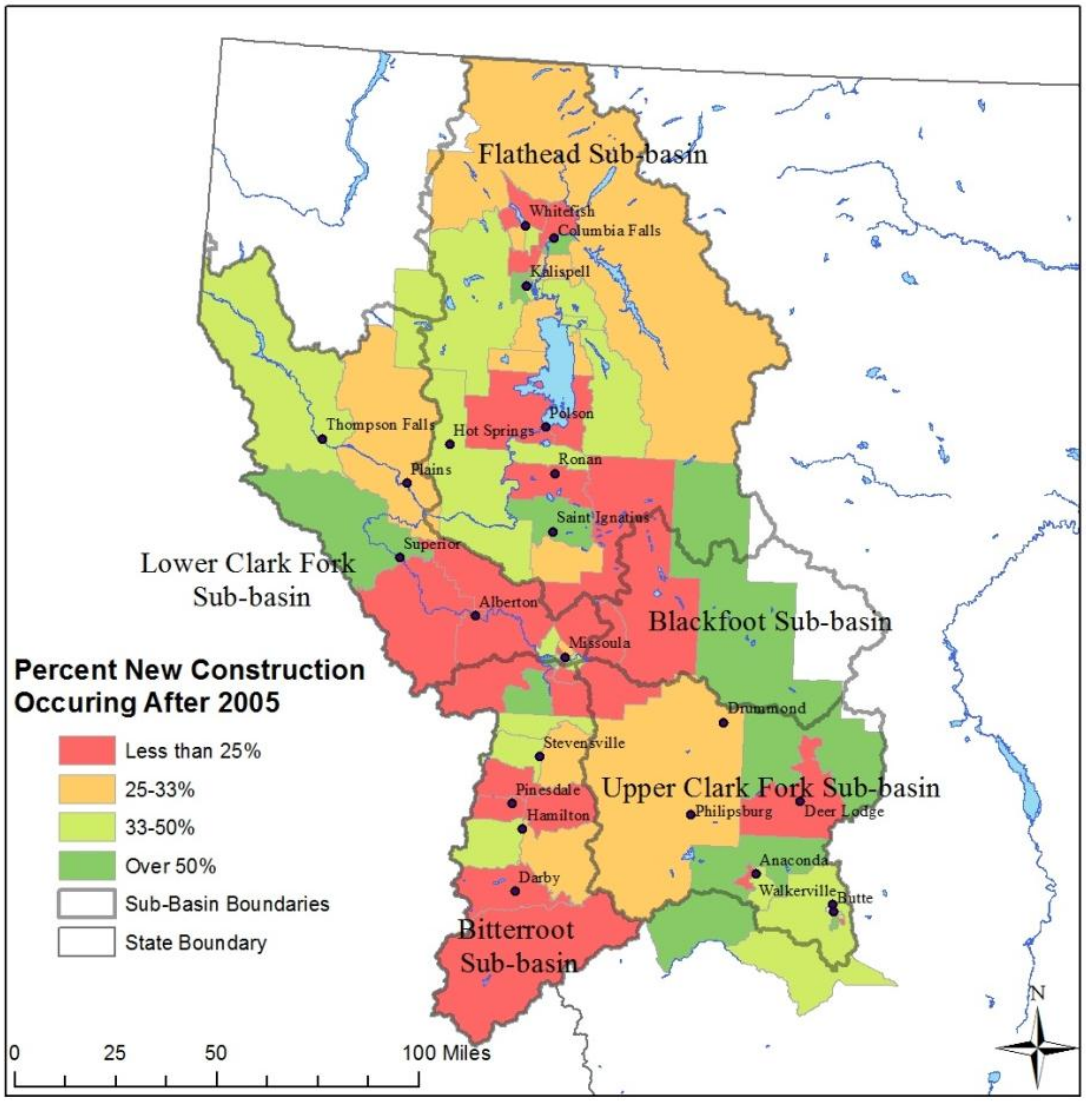
Figure 4: Percentages of number of housing units built between 1990 and 2010
Source: United States Census Bureau, 2006-2010e

Map 9 shows the percentage of housing units constructed later than 2005 out of all of those constructed between 2000 and 2010, and presents the spatial dimensions of this dynamic at the more detailed, census tract scale. The majority of the watershed, especially along the Highway 93 Corridor, saw at least less than a third of housing stock built between 2000 and 2010 built in the second half of the decade, with many areas seeing even less than a quarter. In contrast, the Upper Clark Fork sub-basin and those areas on the periphery of the watershed saw relatively high rates of new construction at the end of the decade.

Implications

Between 2000 and 2010 the number of housing units continued to grow in the Clark Fork watershed, though at a slower pace than the prior decade. The decrease in new housing construction in the second half of the decade between 2000 and 2010 was likely influenced by

the recession. The Missoula Organization of Realtors (2011) show that for Missoula County, for instance, home sales rose throughout the first half of the decade, reaching their peak in 2006, and that the years after 2007 all showed lower home sales than at any prior point during the decade.



Map 9: Construction that occurred 2005 or later, 2000-2010
Source: United States Census Bureau,2006-2010e, Census Tract Level

Declining home sales suggest a decline in demand for homes, which inhibits new construction, and would help explain why construction slowed greatly throughout the majority of the watershed at the end of the decade. However, the slow pace of new construction in the second half of the decade may also simply be a product of the already surplus amount of housing stock

in the watershed from the housing boom of the 1990's. The recession could have exacerbated or highlighted the conditions of too much housing stock in the watershed, which existed well before the recession itself.

Those areas throughout the watershed that showed relatively less decline in new construction in the second half of the decade fall in to two groups. On the one hand, the outlying areas of the watershed and the Upper Clark Fork sub-basin generally saw more construction in the second half of the decade. On the other hand, some census tracts with higher rates of construction are adjacent to more populous areas that saw much lower rates of construction for that same time period. It appears that this happened most frequently next to more urban areas in the watershed that saw a significant slowdown in the second half of the decade. This contradictory growth in adjacent census tracts raises questions as to why new development occurred in these isolated pockets throughout the watershed despite the fact that most of the areas around them saw a dramatic decline in construction during the same period. Whereas some of this may also be a result of rates being relatively high because the initial base value was low, it could also signal that these areas are at an earlier stage in transitioning towards the New West, and perhaps had not reached a state of housing surplus such as is seen in the more populous areas of the region.

Occupancy and Tenure Rates

Justification and Context

Occupancy rates help to determine the economic vitality of a community, as well as whether residents in a community are able to find accessible, affordable housing. Analyzing occupancy patterns provides an understanding of how changes in population, income levels and various employment dynamics are operating within the watershed. Occupancy operates in the

universe of total housing units, and distinguishes between units that are occupied or vacant. Among occupied units there is a further distinction by tenure, which takes measures of which housing units are owned or rented. Tenure rates provide insight into the nature of the population in the community with regard to economic opportunity and access to and affordability of housing. Home ownership is the hallmark of the American dream, and higher rates of homeownership suggest not only that there is a substantial market for housing fostered by a healthy or growing economy, but also perhaps that development patterns are more evenly paced with rates of population growth or decline. Homeowner and rental vacancy rates expose the presence of housing shortages and surpluses. Vacancy rates distinguish between housing units that are vacant due to being for sale, for rent, or for seasonal use. Vacancies due to sale are indicative of surplus in the housing market and are typical of owner-occupied units, whereas rental vacancies suggest a less mobile community. Seasonal vacancies are tied to recreational use and are indicative of New West characteristics.

Housing occupancy rates in the Clark Fork watershed during the decade between 1990 and 2000 were similar to those in the Rocky Mountain region and in the U.S. as a whole for tenure by owner (Clark Fork Coalition, 2005). Two main factors will have affected occupancy status since the last *State of the River Report*. First, the country as a whole has been immersed in the current recession, and the housing market was not only greatly affected by that but also played a significant role in bringing the recession about in the first place. Second, due to the housing boom of the 1990's, much of the watershed has been experiencing a housing surplus that has outpaced population growth. It is expected that these two factors will be reflected in the occupancy rates in the watershed for the most recent decade.

Findings

Between 2000 and 2010, occupancy rates fell and vacancy rates rose in the Clark Fork watershed, the State of Montana, the Rocky Mountain region, and the U.S. as a whole (see Table 7). This means that in all of those areas a higher proportion of housing units were unoccupied in 2010 than the decade before. Similarly, every county in the watershed saw a drop in occupancy and rise in vacancy rates.

	Total housing units (Number of Individuals)		Occupied housing units (Percentage of total housing units)		Vacant housing units (Percentage of total housing units)	
	2000	2010	2000	2010	2000	2010
U.S.	115,904,641	131,704,730	91.0	88.6	9.0	11.4
Rocky Mountain Region	7,538,167	9,524,824	89.0	86.6	11.0	13.4
Montana	412,633	482,825	86.9	84.8	13.1	15.2
Clark Fork Watershed	139,013	170,130	86.6	83.3	13.4	16.7
Mineral	1,961	2,446	80.8	78.1	19.2	21.9
Sanders	5,271	6,678	81.1	76.7	18.9	23.3
Flathead	34,773	46,963	85.1	79.9	14.9	20.1
Lake	13,605	16,588	74.9	68.9	25.1	31.1
Missoula	41,319	50,106	93.0	91.7	7.0	8.3
Ravalli	15,946	19,583	89.6	86.5	10.4	13.5
Deer Lodge	4,958	5,122	80.6	78.4	19.4	21.6
Granite	2,074	2,822	57.9	50.2	42.1	49.8
Powell	2,930	3,105	82.7	79.4	17.3	20.6
Silver Bow	16,176	16,717	89.2	89.3	10.8	10.7

Table 7. Occupancy and vacancy rates, 2000 & 2010
Source: United States Census Bureau, 2000d, 2010c

To put this more in to context, it is worthwhile looking at the rates of change for housing occupancy in the watershed (see Table 8). Housing stock in the watershed rose by 22 percent between 2000 and 2010, which was at a faster rate than the U.S. as a whole and State of Montana, but slower than the Rocky Mountain region. The difference in the rate of change for occupied versus vacant units in the watershed is striking, with 18 percent versus 53 percent

respectively. This implies that the rate at which housing units became vacant far outpaced the rate at which housing units were being filled over the past decade.

	Total Housing Units		Percent Change between 2000-2010		
Geography	2000	2010	Total Housing Units	Occupied Housing	Vacant Housing
U.S.	115,904,641	131,704,730	13.6	10.7	43.8
Rocky Mountain Region	7,538,167	9,524,824	26.4	22.8	54.9
Montana	412,633	482,825	17.0	14.2	35.7
Clark Fork Watershed	139,013	170,130	22.4	17.6	53.1
Mineral	1,961	2,446	24.7	20.6	41.9
Sanders	5,271	6,678	26.7	19.8	56.0
Flathead	34,773	46,963	35.1	26.8	82.4
Lake	13,605	16,588	21.9	12.2	51.1
Missoula	41,319	50,106	21.3	19.5	45.1
Ravalli	15,946	19,583	22.8	18.5	59.9
Deer Lodge	4,958	5,122	3.3	0.6	14.6
Granite	2,074	2,822	36.1	18.1	60.8
Powell	2,930	3,105	6.0	1.8	25.8
Silver Bow	16,176	16,717	3.3	3.5	2.4

Table 8. Rates of change for total housing units, and total occupied and vacant housing, between 2000 & 2010
Source: United States Census Bureau, 2000d, 2010c

Tenure rates are divided between ownership and rental rates (see Table 9). As home ownership has long been not only important in terms of having a place to live but also as an economic asset, this distinction helps provide input on the economic status of a community. Keeping in mind that occupancy rates as a whole dropped at all levels between 2000 and 2010, it is notable that home-ownership also fell, both in Montana and in the watershed. However, renter rates rose both in the watershed and the state. The only exceptions to this were in Granite and Mineral counties.

The changes in tenure and vacancy rates, though they follow a clear pattern, are not striking. At all regional levels, from the watershed to the national level, the change in tenure was

no greater than three percentage points, though some individual counties in the watershed saw greater percentage changes.

	Owner-occupied		Renter-occupied	
	2000	2010	2000	2010
U.S.	66.2	65.1	33.8	34.9
Rocky Mountain Region	68.0	66.2	32.0	33.8
Montana	69.1	68.0	30.9	32.0
Clark Fork Watershed	69.5	67.5	30.5	32.5
Mineral	73.4	74.8	26.6	25.2
Sanders	76.4	75.1	23.6	24.9
Flathead	73.3	70.8	26.7	29.2
Lake	71.4	71.2	28.6	28.8
Missoula	61.9	59.4	38.1	40.6
Ravalli	75.7	74.5	24.3	25.5
Granite	74.4	75.0	25.6	25.0
Deer Lodge	73.6	70.7	26.4	29.3
Powell	71.3	70.5	28.7	29.5
Silver Bow	70.4	67.6	29.6	32.4

Table 9. Percent of occupied housing units by tenure
Source: United States Census Bureau, 2000d, 2010c

Implications

Changes in occupancy status throughout the watershed seem to imply that housing patterns have been adversely impacted by the recession. Occupancy rates in the watershed and in each individual county declined over the last decade as vacancy rates rose. On top of lower occupancy rates, most counties in the watershed also experienced lower rates of homeownership, with correspondingly higher rental rates. This could be a result of the recession, causing the housing market in the watershed to decline. In a similar vein, there could be a higher level of reluctance or inability on the part of potential homeowners to buy a house, or the presence of various factors which are discouraging to otherwise potential in-migrants. It is also possible that

in spite of the recession, the development that occurred in the watershed in the past two decades surpassed population growth, which would cause lower occupancy rates.

Although the changes in occupancy status between 2000 and 2010 are not great, relating the actual numbers on change in occupancy and vacancy to the number of new housing units built during the decade presents a nuanced picture of how development patterns relate to population change. Specifically, although occupancy rates throughout the watershed, and in the Rocky Mountain Region and U.S. as a whole, are between 80 and 90 percent, the occupancy rates for between 2000 and 2010 compared to the number of housing units built during that period are significantly lower than that. This again suggests that new construction outpaced demand during the past decade.

On a county by county basis, this measure highlights those counties which saw a dramatic difference between changes in occupancy and new housing units over the decade. Almost all of these counties are in the Old West portions of the watershed and, interestingly, not specifically within the Upper Clark Fork sub-basin. This would suggest that some counties, such as Powell County in the Blackfoot Sub-basin, where the occupancy rate for new housing units is only 25 percent, experienced development at a level that was not matched by demand. It should be noted that this measure does not take into account the presence of seasonal and recreational housing, which are included within vacancy rates and are discussed in the next section. An increase in the number of vacancies for seasonal use would question the assertion that low occupancy rates for housing units built between 2000 and 2010 are due to impacts from the recession, as it could indicate that newer development has included higher rates of second homes or homes for recreational and vacation uses. An increase in vacancies for seasonal use would be

an indicator that the areas in the watershed such as Powell County are at a younger stage in transitioning towards the New West.

Housing Units for Seasonal Use

Justification and Context

Seasonal and recreational housing data is one factor amongst a variety of factors that the Census Bureau differentiates between for vacancy status. Being able to focus on seasonal and recreational vacancies provides an indication of the extent to which development within the watershed is utilized on a seasonal basis, which has economic implications for the region. Second homes can play a role in the phenomenon of amenity migration by providing temporary or future housing options for individuals from outside of the region who will potentially move there in the future. Seasonal housing is not exclusively for amenity migrants from outside of the watershed, as it is not uncommon for some individuals within the area, especially in more urban counties, to have vacation homes in other parts of the region.

The last *State of the River Report* found high numbers of vacant housing for seasonal use, especially in Granite, Mineral, Lake, and Flathead Counties. All of these counties offer access to natural amenities, though only Lake and Flathead Counties have seen the kinds of population growth that are more in line with New West dynamics. However, considering that growth patterns associated with the New West are temporally and spatially complex (Beyers and Nelson, 2000), high rates of seasonal and recreational housing activity is an indicator of at least the potential for developing New West dynamics.

Findings

For the watershed as a whole, between 2000 and 2010 the overall vacancy rate rose slightly from 13 to 15 percent, compared to the period between 1990 and 2000. Though the

vacancy rate only rose by two percentage points, the percent of those vacancies for seasonal and recreational uses rose five percentage points, from 55.5 to 60.5 percent. All counties but one with unchanged vacancy rates saw higher vacancy rates for seasonal use than the decade before, and as all counties saw higher vacancy rates as a whole, this suggests that overall numbers of housing used for seasonal and recreational uses increased throughout the watershed (see Figure 5).

Table 10 compares the number of vacancies for seasonal and recreational use between

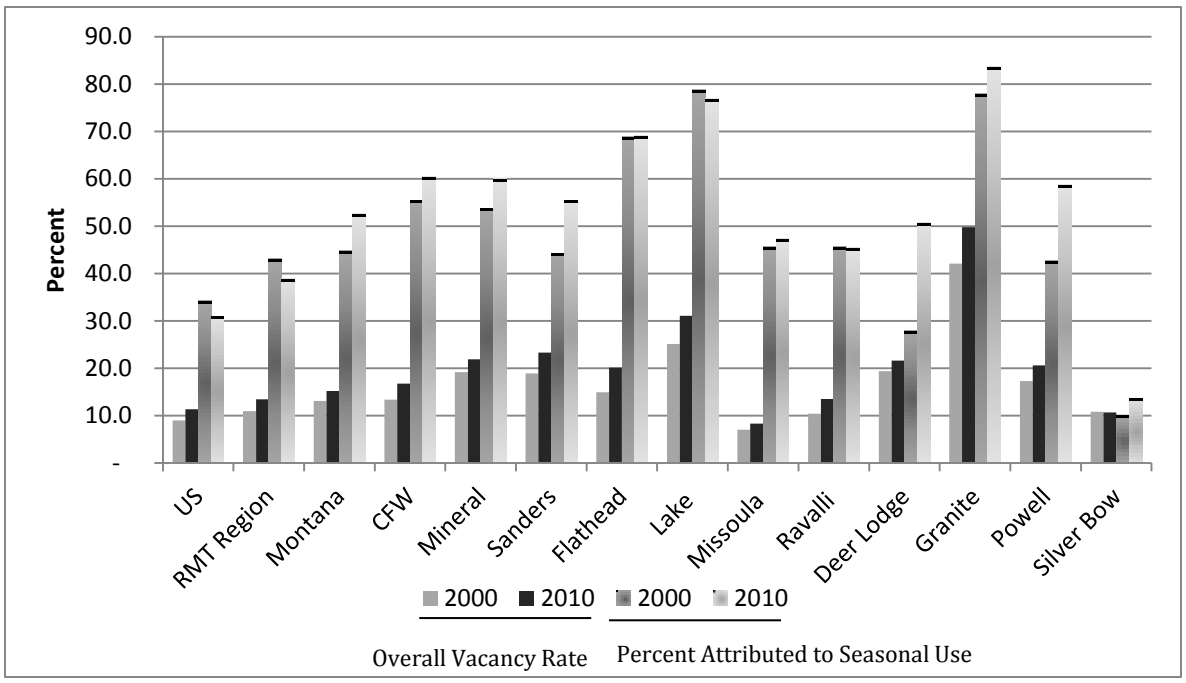


Figure 5: Vacancy rates and seasonal use rates, 2000 and 2010
Source: United States Census Bureau, 2000d, 2010c

2000 and 2010 to both the number of new housing units and the total change in vacancy numbers for that period. This is an attempt to portray how much development during the past decade was associated with seasonal and recreational use. Under this measure, a percentage of 100 percent for change in seasonal use by change in vacancy would imply that all change in vacancies is explained by seasonal uses, and for change in seasonal use by number of new housing that all new housing was for seasonal use. Numbers over 100 for change in seasonal use by change in

vacancy imply that new housing supplies and changes in vacancy numbers alone do not explain the rise in seasonal use rates and that most likely pre-existing structures were converted over for seasonal use. Under this measure, 70 percent of the almost 10,000 new vacancies in the watershed are vacant because of seasonal use, whereas 22 percent of over 31,000 new housing units in the watershed were built as second homes or vacation rentals. The most striking pattern in the watershed under this measure is for the Upper Clark Fork sub-basin, especially Deer Lodge, Granite and Powell counties, where it appears that vacancies for seasonal use account for almost all of or more than the new construction and changes in vacancy numbers in that region.

	Numeric Change Between 2000-2010			Percent Change Between 2000-2010	
	New Housing Units	Change in Vacancies	Change in Vacancies for Seasonal Use	Vacancies for Seasonal Use by Total New Vacancies	Vacancies for Seasonal Use by New Housing Stock
US	15,800,089	4,563,898	1,070,580	23.5	6.8
Rocky Mountain Region	1,986,657	453,470	142,138	31.3	7.2
Montana	70,192	19,252	14,297	74.3	20.4
Clark Fork Watershed	31,117	9,871	6,913	70.0	22.2
Mineral	485	158	118	74.7	24.3
Sanders	1,407	559	422	75.5	30.0
Flathead	12,190	4,274	2,972	69.5	24.4
Lake	2,983	1,743	1,273	73.0	42.7
Missoula	8,787	1,300	668	51.4	7.6
Ravalli	3,637	993	448	45.1	12.3
Deer Lodge	164	141	290	205.7	176.8
Granite	748	531	494	93.0	66.0
Powell	175	131	159	121.4	90.9
Silver Bow	541	41	69	168.3	12.8

Table 10. Numeric and percent change in seasonal housing compared to new housing units and changes in vacancy rates, 2000-2010

Source: United States Census Bureau, 2000d, 2010c, 2006-2010e

Implications

Vacancy rates for seasonal or recreational uses continued to increase between 2000 and 2010. This increase implies that the distribution of second homes and vacation homes was potentially unaffected by the recession, or that amenities in the region continue to create a pull for potential amenity migrants or current amenity seeking residents. These higher seasonal use rates could also soften the impact of higher vacancy rates discussed in the previous section.

Although rates of seasonal use do not equal amenity migration, they are a prime indicator of the possibility for this New West dynamic. Housing for seasonal use is also often associated with exurban development, as individuals often look to spend vacations or time recreating in areas that contain natural amenities and which are more distant from urban areas. Development for seasonal and recreational use brings up issues of dispersed development patterns, as well as increased development in the WUI and in potential fire areas, and in areas that demand more services and infrastructure on a per capita basis.

Affordability

Justification and Context

Housing affordability is a key indicator of whether the cost of living in a community is within the means of its residents. Essentially, housing affordability is a comparison of rent and mortgage prices in an area to the amount of income that individuals earn and receive. Housing affordability is tied to the economic dynamics that are associated with New West dynamics. Just as natural amenities create a pull for individuals looking for more attractive places to live, they also create greater monetary value on the land that is accessible to those amenities. The amenity migration that the Rocky Mountain region has seen has brought with it added income and wealth to the region, much of which is from equity and rising home values in other parts of the country

over the last several decades, which has caused home prices in some areas to rise. Because the rise of home prices is not necessarily tied to rising wages within local communities, housing affordability has become an issue at the heart of the tension found in many communities affected by New West patterns and trends. More recently the recession, which further negatively affected people's income and employment status, is another important factor in looking at housing affordability over the past decade.

There are different ways of calculating housing affordability. The previous *State of the River Report* used the housing affordability index (HAI) approach, which measures whether the typical family in a community can afford a typically priced home. The HAI essentially measures the median income of a community against the median home price while also accounting for other home sales variables, such as current interest rates. The previous *State of the River Report* found that the median family in the watershed could afford the median priced home, but that in all counties the margin of affordability had fallen since 1990.

This project uses a somewhat different measure, which is the amount that households spend on housing as a percentage of monthly income. This measure is provided by the Census Bureau through the ACS, and is used to identify rates of "housing-cost burden" in a community (United States Census Bureau, 2007, 1). Households are burdened when more than 30 percent of income is expended on housing costs. A further distinction is made between moderate housing cost burden and severe housing cost-burden. Housing burden is considered severe when households pay more than 50 percent of their monthly incomes on housing.

Findings

Housing in the watershed continued to become less affordable between 2000 and 2010. Between 2000 and 2010, the Clark Fork watershed saw a considerable rise in the amount of

occupied housing units in the basin (see Table 11). Whereas the country as a whole saw a rise in occupied housing of just over 25 percent, the watershed saw a percent change of more than double that, and saw a higher percent increase in occupied housing than both the State of Montana and the Rocky Mountain region. This dramatic rise in the number of occupied housing units in the area is important to consider, as affordability is measured within the universe of occupied housing. Additionally, as overall numbers increase, numeric changes within that universe become smaller percentages of the whole, even though the numbers themselves may be significant. The findings for this section show notable changes in the percentage of affordable and housing-burdened households, which means that percentages for 2010 imply higher numeric values than the percentages for 2000.

	Total Occupied Housing Units		Percent Change in Occupied Housing Units
Geography	2000	2010	
United States	90,411,610	114235996	26.4
Rocky Mountain Region	5,700,507	8,029,617	40.9
Montana	270,817	401,328	48.2
Clark Fork Watershed	90,840	138,898	52.9
Mineral County	923	1,760	90.7
Sanders County	2,353	5,119	117.6
Flathead County	21,552	36,348	68.7
Lake County	6,874	12,015	74.8
Missoula County	31,217	44,172	41.5
Ravalli County	9,400	16,643	77.1
Deer Lodge County	3,562	4,136	16.1
Granite County	779	1,461	87.5
Powell County	1,715	2,397	39.8
Silver Bow County	12,465	14,847	19.1

Table 11. Numerical and percent change in occupied housing units, 2000-2010
Source: United States Census Bureau, 2000b, 2010c

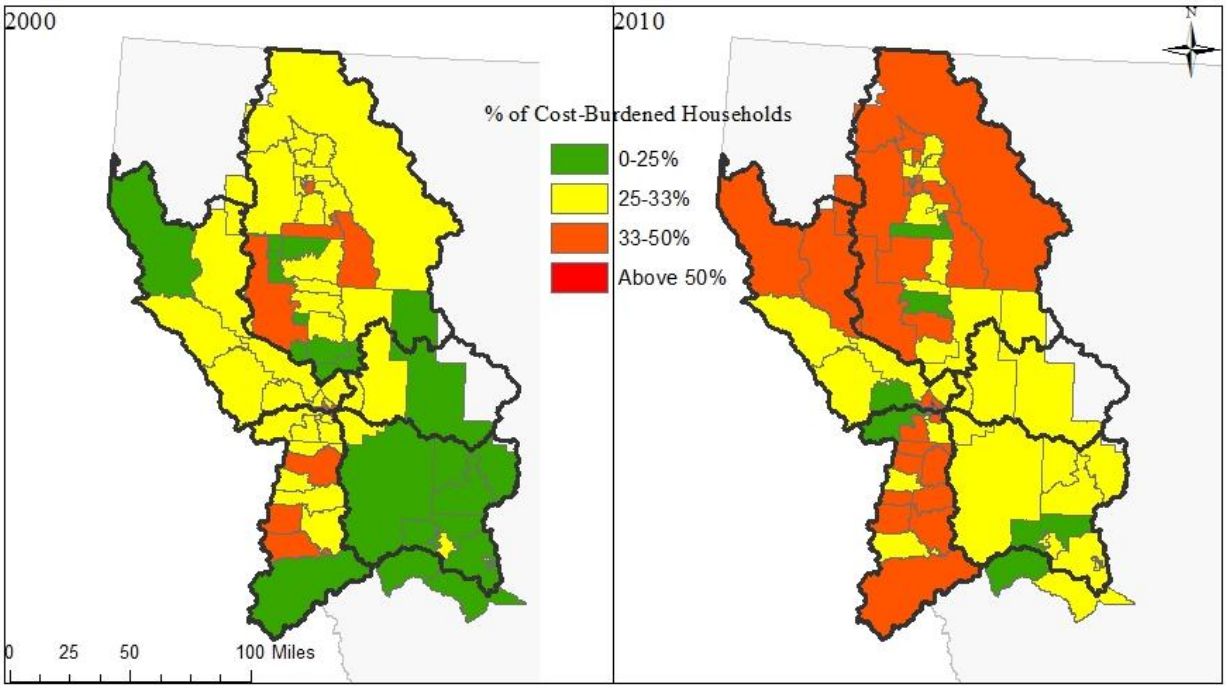
Table 12 shows the percentages of households that are not housing-burdened, are housing-burdened, and are severely housing-burdened for 2000 and 2010. In 2000, the Clark Fork watershed had a smaller proportion of non-burdened occupied housing, paying less than 30

percent of their monthly income on housing costs, than the country, the Rocky Mountain region, and State of Montana. Between 2000 and 2010, affordability rates for the country as a whole and the Rocky Mountain region dropped the most dramatically, and in 2010 both of those regions and the watershed showed the same rate of affordable housing at 61 percent, meaning that less than two thirds of the households in those regions were not housing burdened. Every county in the watershed but one saw a decrease in the proportion of affordable, or un-burdened, housing during the past decade.

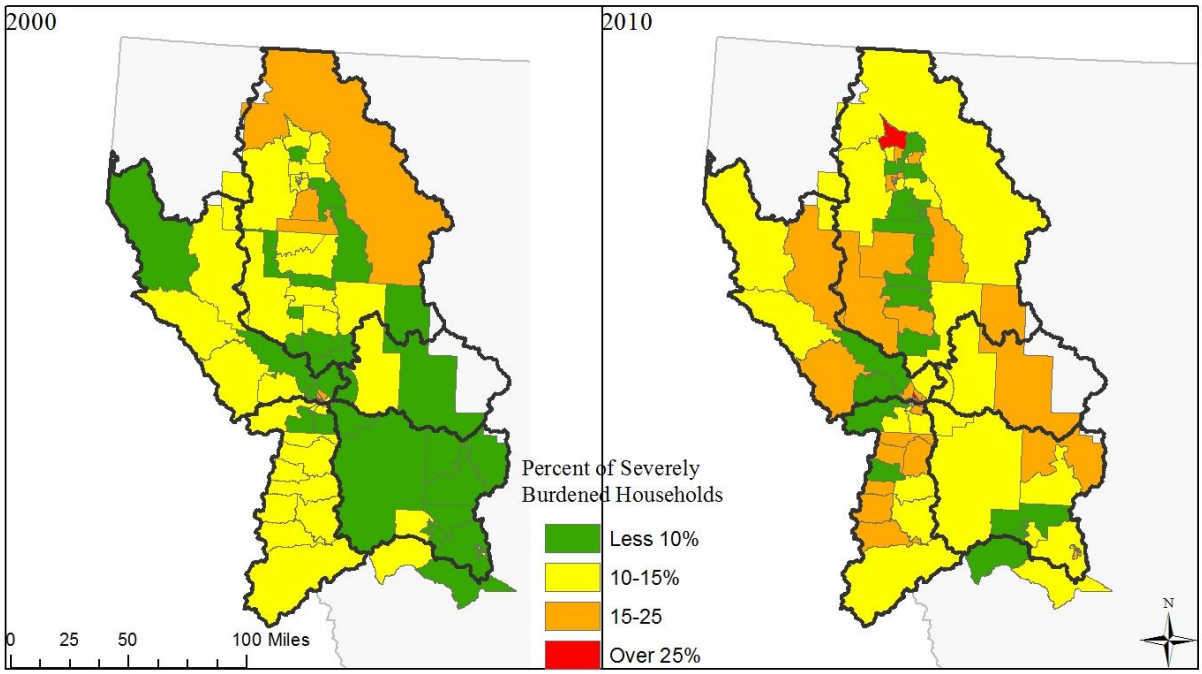
	Not Housing Burdened		Housing Burdened		Severely Housing Burdened		Housing Burdened Out of Total Housing Burdened	
Location	2000	2010	2000	2010	2000	2010	2000	2010
United States	68.9	61.2	27.7	35.9	11.5	15.9	41.6	44.3
Rocky Mountain Region	68.3	61.8	28.5	35.4	11.1	14.9	38.8	42.2
Montana	68.5	66.1	26.8	29.7	10.8	12.5	40.5	42.2
Clark Fork Watershed	65.8	61.6	30.7	34.9	12.7	15.2	41.4	43.7
Mineral County	64.2	65.2	28.8	29.9	14.1	13.6	48.9	45.4
Sanders County	66.6	60.9	26.6	34.8	11.3	15.0	42.3	43.1
Flathead County	66.7	61.8	29.9	35.6	12.5	15.4	41.7	43.3
Lake County	65.4	64.5	29.3	29.8	10.8	13.5	36.8	45.3
Missoula County	61.2	58.0	36.2	38.3	15.6	17.1	43.1	44.6
Ravalli County	64.4	59.5	31.8	37.6	13.3	15.8	41.6	41.9
Deer Lodge County	72.9	69.1	22.3	25.6	9.2	9.0	41.4	35.3
Granite County	69.2	63.0	24.0	31.1	7.1	14.5	29.4	46.6
Powell County	74.3	64.7	19.7	27.8	7.1	13.0	35.9	46.8
Silver Bow County	73.3	68.7	23.2	28.9	8.8	12.6	37.8	43.6

Table 12. Percentage change of housing burden, 2000-2010
Source: United States Census Bureau, 2000b, 2000f, 2006-2010f, 2006-2010h

Also of note are the changes over the past decade for households considered to be facing severe housing burden, or those households paying more than half of their monthly income on housing costs. Although the changes in percent of severely burdened households at the national,



Map 10: Distribution of housing-burdened households who pay more than 30% of their monthly income on housing costs, 2000 and 2010
Source: United States Census Bureau, 2000b, 2000f, 2006-2010f, 2006-2010h



Map 11: Distribution of severely housing-burdened households who pay more than 50% or their monthly income on housing costs
Source: United States Census Bureau, 2000b, 2000f, 2006-2010f, 2006-2010h

regional, state, and watershed level did not change by more than five percentage points at any level, they all saw more severe housing burden than in the previous decade.

The watershed saw the percentage of households paying more than half of their income on housing costs as a proportion of households that were housing burdened increased by two percentage points. However, some individual counties saw an increase of much more than that, such as Granite, Lake and Powell counties. Deer Lodge was the only county that decreased significantly under this measure.

In order to better understand the spatial distribution of the increasingly less affordable housing stock in the watershed, Map 10 and Map 11 show the changes in the watershed between 2000 and 2010 for both the distribution of housing burden, and the areas that show higher rates of severe housing burden. The latter is meant to be a measure of where there is a likelihood of greater inequality between households that can and cannot pay for housing in their community.

Implications

Increasing economic disparity is a phenomenon associated with the New West due to the fact that amenity migrants typically bring outside financial resources that are not necessarily tied to local economies, whether in the form of non-labor income or equity from homes in more expensive housing markets. This dynamic is often tied to local housing markets in areas experiencing changes associated with the New West, where housing and rental prices rise because of the expanded ability for amenity migrants to pay higher prices to live there. This situation is often understood as a disparate relationship between the cost of living, which continually increases, and average wages, which have for the most part remained stagnant for decades now. The question becomes how much of the increasing lack of housing affordability in the watershed is due to this New West regional gentrification.

It seems clear that housing became less affordable throughout the watershed between 2000 and 2010. As Map 10 illustrates, in 2000 the majority of the watershed saw rates of less than a third of households paying more than 30 percent of their monthly income on housing costs, and a significant part of the watershed saw less than a quarter. In 2010, however, the majority of the watershed saw rates for housing burdened households over 25 percent, and a significant area saw rates over 33 percent. Notably, those areas that saw the highest rate of housing burden were in the Flathead and Bitterroot sub-basins, both of which are in the Highway 93 corridor and exhibit many of the characteristics associated with the New West. The pattern of which areas experienced rises in the percentage of housing-burdened households somewhat mirrors that of those areas that saw a drastic slowdown in new construction (see Map 9), which suggests that housing affordability becomes a more significant issue for communities farther along in transitioning towards the New West.

Employment Characteristics

Change in Dominant Employment Sectors

Justification and Context

New West dynamics include changes in employment that favor service sector jobs and often follow a decline in more traditional, extractive industrial sectors such as farming, mining and forestry. Nevertheless, communities that can be categorized as New West do not necessarily exclude Old West industries, and in some cases continue to rely on at least one form of traditional economic sector. Economic sectors have over time come to be grouped into three classifications, which help to distinguish what type of economic activity and change is occurring in a community. Primary sectors include the more traditional economic sectors such as agriculture, forestry, mining and fisheries. Secondary sectors include more classic "industry" activities such as manufacturing and construction. And the tertiary sectors include what are considered to be "services", which consists of a broad and diverse range of economic activity. Another classification which makes sense to use in this case is that of government, which includes publicly funded employment at the federal, state and local levels, and includes schools, colleges, police and fire departments, and employment in public agencies.

The previous *State of the River Report* documents how the nature and makeup of employment throughout the watershed changed during the several decades leading up to 2000 (Clark Fork Coalition, 2005). Specifically, compared to the 1970's and before, when the dominant employers in the region were resource-dependent industries such as farming, ranching, forestry and mining, the economy in the watershed by 2000 had changed to a more services-oriented and construction based economy. Specifically, in the period between 1970 and 2000, the most robust job growth occurred in the services sector (including health, legal, business,

engineering, retail trade and management) as well as in construction. Some counties, such as Missoula, saw notable growth in government employment, and Lake and Granite counties saw considerable growth in the manufacturing sector.

Employment data considered here come primarily from the Bureau of Economic Analysis' Regional Economic Industry System (REIS). Data from the Census Bureau's County Business Pattern (CBP) is also used but less so, and unless otherwise stated the figures below rely upon REIS data. As a reminder, REIS data has the potential to be overinflated as it makes several counts though the year and does not distinguish between individuals that are counted multiple times. Additionally, it should be noted that the classification system used by the REIS for the previous *State of the River Report* has changed in the last decade. Therefore, comparisons cannot be made directly to the findings from the last report. The new classification system went into effect in 2001, and so the analysis in this section on change in employment sectors between 2000 and 2010 uses 2001 as its base year. The latest year that REIS data is available for inclusion in this project is 2009, making the actual time span considered 2001 to 2009. Please note that the individual sector names are abbreviated in the various figures below. To identify the full employment sector names used the REIS, please reference Table 19 in the appendix to this thesis.

Findings

Between 2001 and 2009, employment in the Clark Fork watershed grew approximately 11 percent, which was less than the State of Montana but more than the nation as a whole for that time period (see Table 13). Several economic sectors saw a shift in their share of overall employment in the watershed by the end of the decade. Specifically, except for mining, all of the primary and secondary economic sectors in the watershed either stayed at the same level or fell

in the percent they make up of overall employment (see Figure 6). Of the dominant sectors that were observed in the previous *State of the River Report*, retail fell by one percentage point, construction stayed even, and health services grew by one percentage point. Finance and real estate sectors both grew in the watershed over the past decade as well.

	Total Employment		Overall Change	
	2001	2009	Numerical	Percent
United States	165,510,200	173,809,200	8,299,000	5.0%
Rocky Mountain Region	5,998,561	6,673,901	675,340	11.3%
Montana	560,432	625,516	65,084	11.6%
Clark Fork watershed	184,497	205,433	20,936	11.3%

Table 13. Overall regional employment change, 2001-2009
Source: Bureau of Economic Analysis, 2001b, 2009b

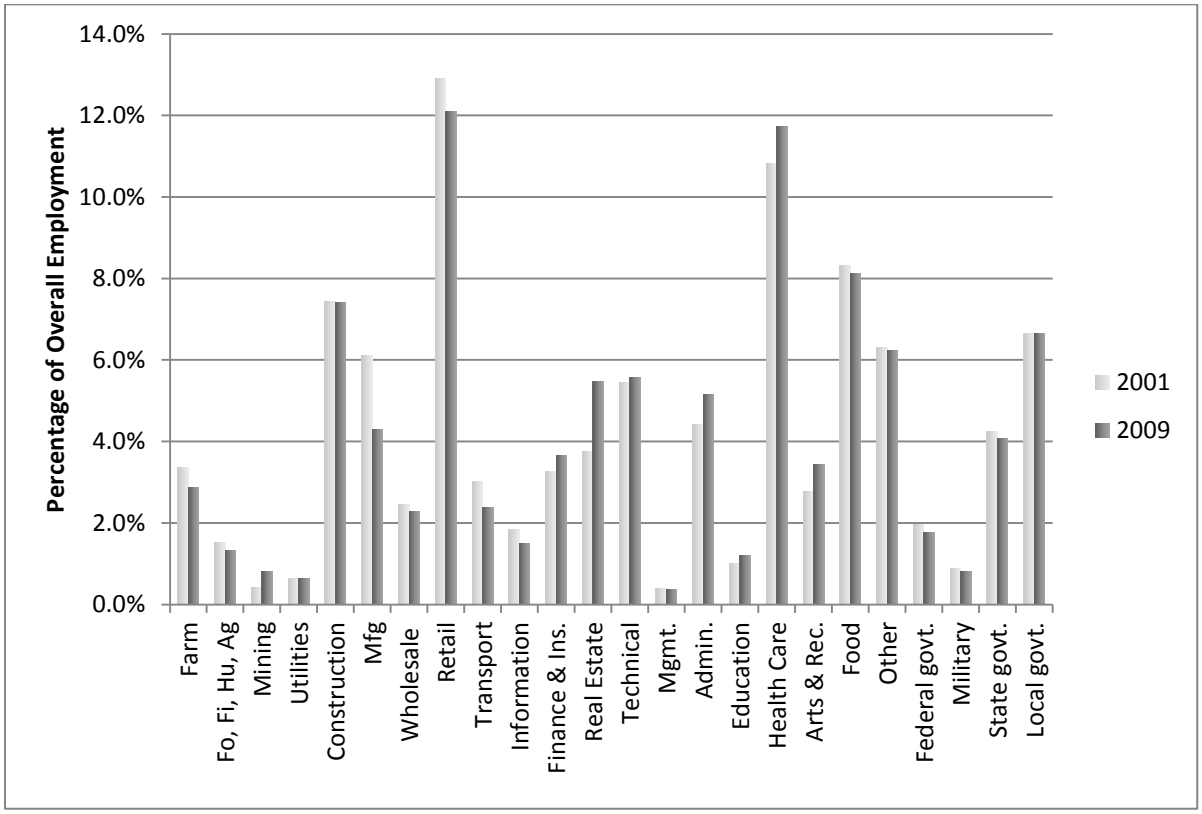


Figure 6: Basin-wide employment by sector, 2001 and 2009
Source: Bureau of Economic Analysis, 2001b, 2009b

Numerically, overall employment in the watershed saw a net increase of 20,936 between 2001 and 2009. However, this growth masks the fact that some sectors fell in employment numbers, in some cases somewhat drastically. Employment in the manufacturing sector, which includes jobs related to wood products, fell by almost 2,500 jobs over the past decade, and other sectors, such as farming, transportation, and information industries saw net losses in unemployment as well (see Figure 7).

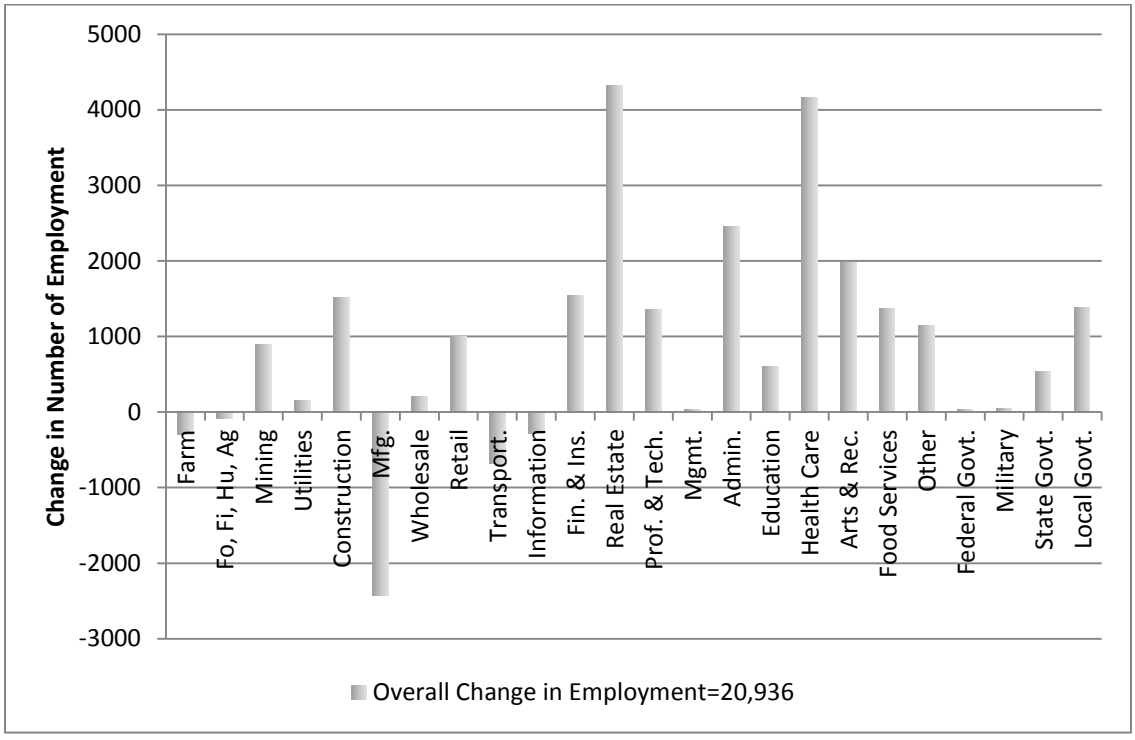


Figure 7: Change in employment by sector for watershed in total numbers, 2001-2009
Source: Bureau of Economic Analysis, 2001b, 2009b

Figure 8 presents the rate of growth and decline for each sector individually. Although those sectors which have few jobs to begin with will show changes more dramatically than more robust sectors, it is telling to refer between Figure 7 and 8 in order to gauge the extent to which growth or decline in individual sectors is noteworthy. For example, the rate of change for the mining sector was particularly high even though less than 1,000 new employees were added to the sector. However, the real estate and rental sector had both a high new number of new

employees, and saw a rate of change of almost 60 percent, implying that the real estate sector saw particularly high growth over the past decade.

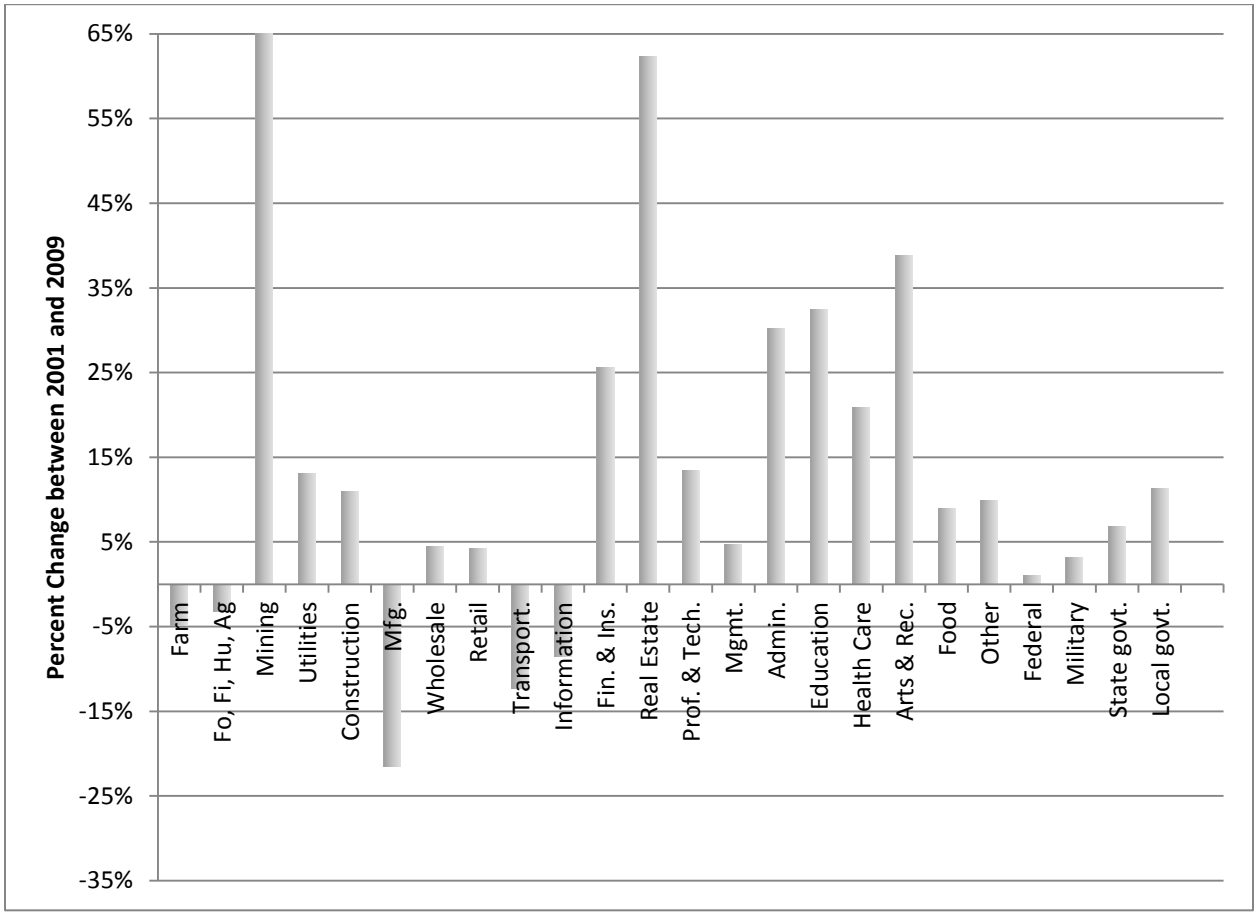


Figure 8: Rate of change in employment by sector for the Clark Fork watershed, 2001-2009
Source: Bureau of Economic Analysis, 2001b, 2009b

Figure 9 presents location quotients for the watershed using the country as a whole, the Rocky Mountain region, and the State of Montana as reference regions. This provides three options for evaluating the relative position of economic sectors in the watershed at the end of the decade. Any value that is higher than one means a particularly overrepresented sector, and a value lower than one means an underrepresented sector.

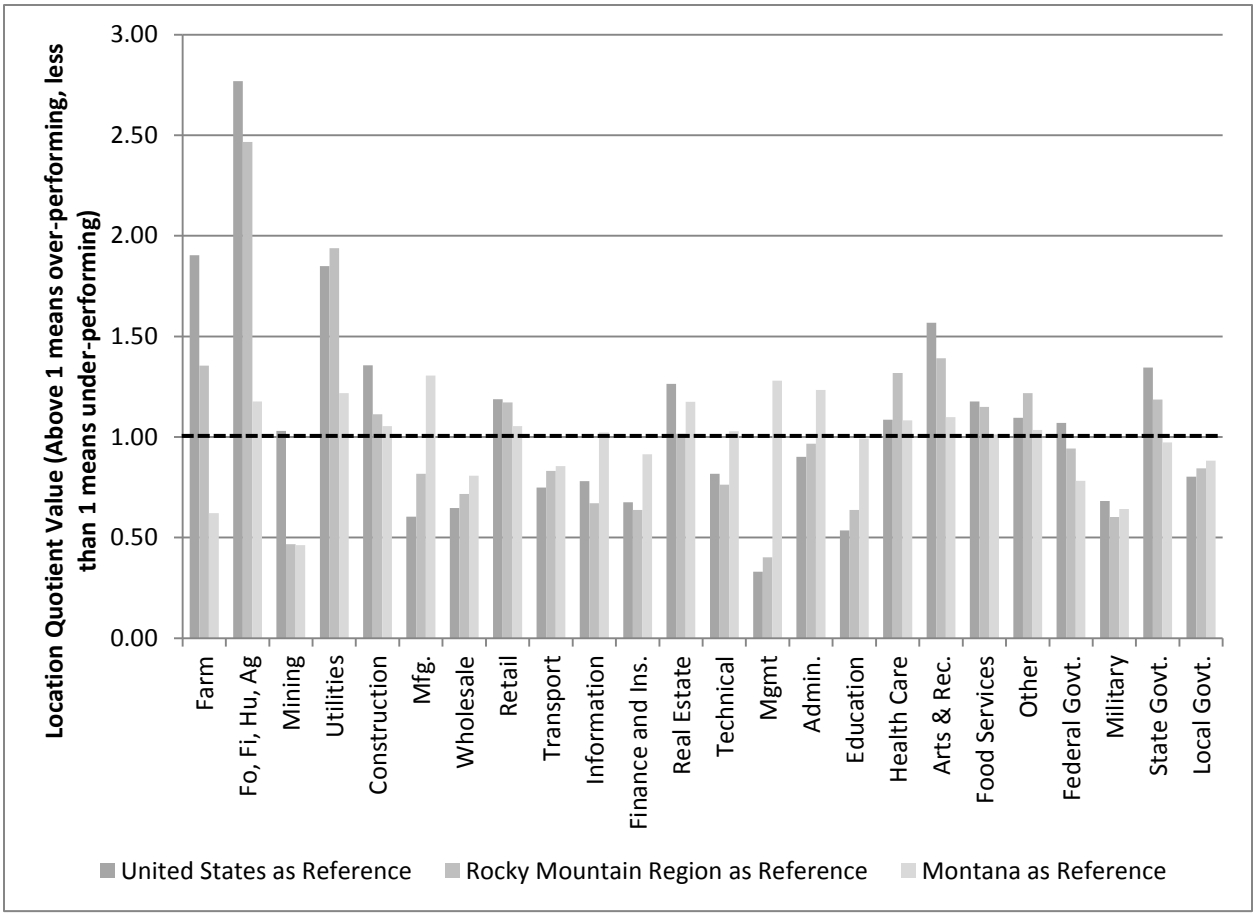


Figure 9: United States, Rocky Mountain Region, and Montana location quotients for the Clark Fork watershed, 2009
Source: Bureau of Economic Analysis, 2001b, 2009b

Some results of this analysis are that the primary economic sectors are far more overrepresented in the watershed than in the nation and the Rocky Mountain region, except for mining, but are underrepresented compared to the state. Construction was overrepresented in the watershed compared to all reference regions, though manufacturing was underrepresented in reference to both the nation and the Rocky Mountain region. Other sectors where the watershed was overrepresented compared to all three reference areas were in utilities, retail trade, health care, and arts and entertainment. The watershed was overrepresented compared to the nation and the state in the real estate sector, but was underrepresented in that sector compared to the Rocky Mountain region.

Grouping individual employment sectors into primary, secondary, tertiary and government groupings gives further perspective on the how employment patterns in the watershed compare with other areas (see Figures 10 and 11). The watershed and all reference regions saw by far the largest proportion of overall employment in the tertiary sector grouping, which contains the broad collection of service industries that have seen such growth in recent decades. Some differences between the greater reference regions and the watershed include higher percentages of government employment in Montana and the Rocky Mountain region, similar rates between the watershed and the Rocky Mountain region for secondary employment sectors, and higher percentages in all of the smaller regions for primary employment sectors than for the nation.

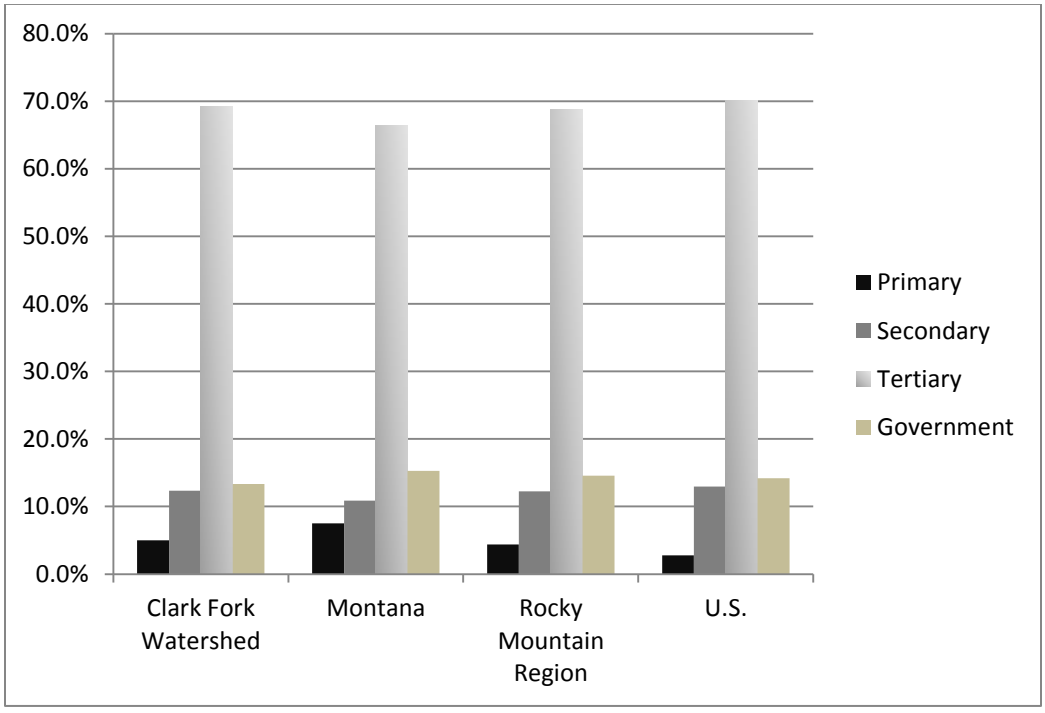


Figure 10: Comparison of regional economies by sector groupings, 2009
Source: Bureau of Economic Analysis, 2001b, 2009b

In order to better understand the nature of the change in these sector groupings between 2000 and 2010, it is helpful to examine the net gain and loss by sector grouping in relation to the

overall change in employment over the decade (see Figure 11). This measure reveals how growth or decline of particular sectors contributes to overall employment change, specifically what kind of employment made up for the sectors where jobs were lost. The most striking disparity within this context was for the nation as a whole, where net loss in the secondary sector canceled out almost 60 percent of the overall gain in employment over the decade, and were it not for the considerable amount of service industry employment, would have had a much more severe impact on employment change for the country. The watershed also saw a net loss within the secondary sector grouping, though not as much as the Rocky Mountain region, and not nearly as significantly as the nation. After the service sector grouping, government saw the biggest net contributions to new employment in the watershed and all regions.

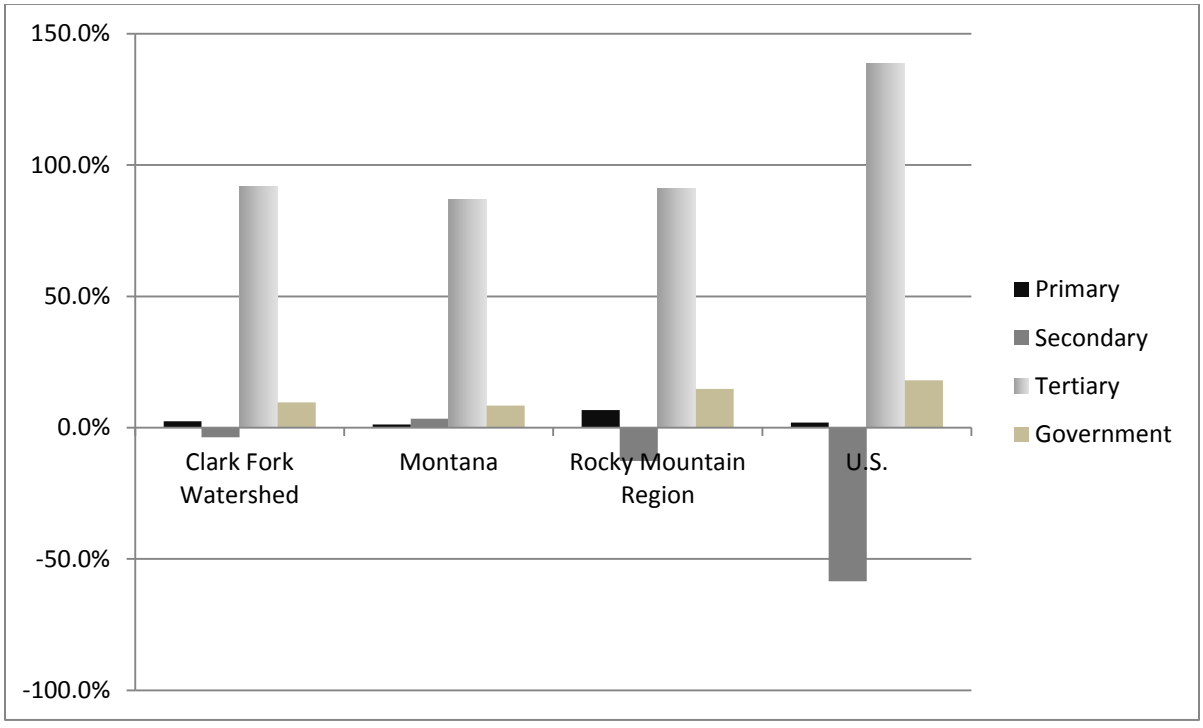


Figure 11: Percentage by which sector grouping is responsible for change in employment numbers between 2001 and 2009
Source: Bureau of Economic Analysis, 2001b, 2009b

A more nuanced understanding of employment patterns in the watershed may be gained by employment amongst individual counties within the watershed (see Figures 12 through 21).

The figures below provide absolute net gain and loss by sector for the individual counties in the watershed. Some patterns that emerge on an individual county basis is net loss in manufacturing jobs, net loss in state jobs while seeing net gains in local government employment, and high net gains in health services and real estate, though these are by no means consistent through the whole watershed. All in all, there is considerable variation in the makeup of employment between the different counties, which provides valuable insight into how local economies within the watershed region performed during the challenges of the past decade.

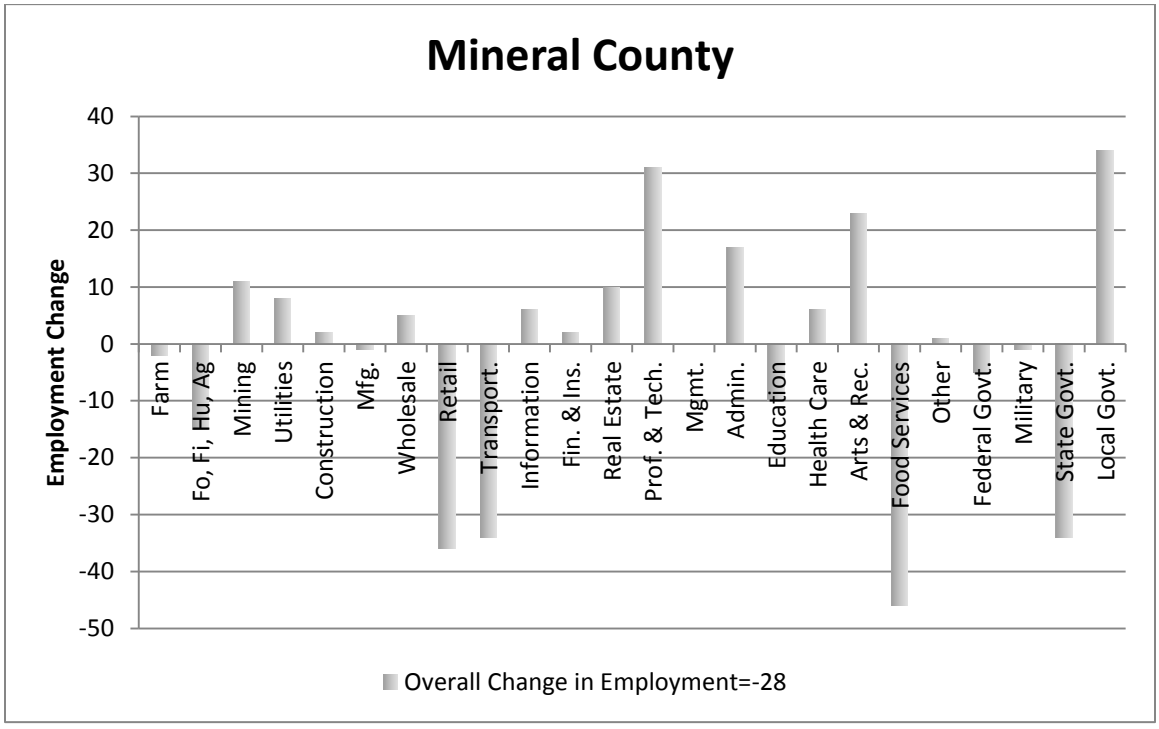


Figure 12: Change in employment by sector for Mineral County, 2001-2009
Source: Bureau of Economic Analysis, 2001b, 2009b

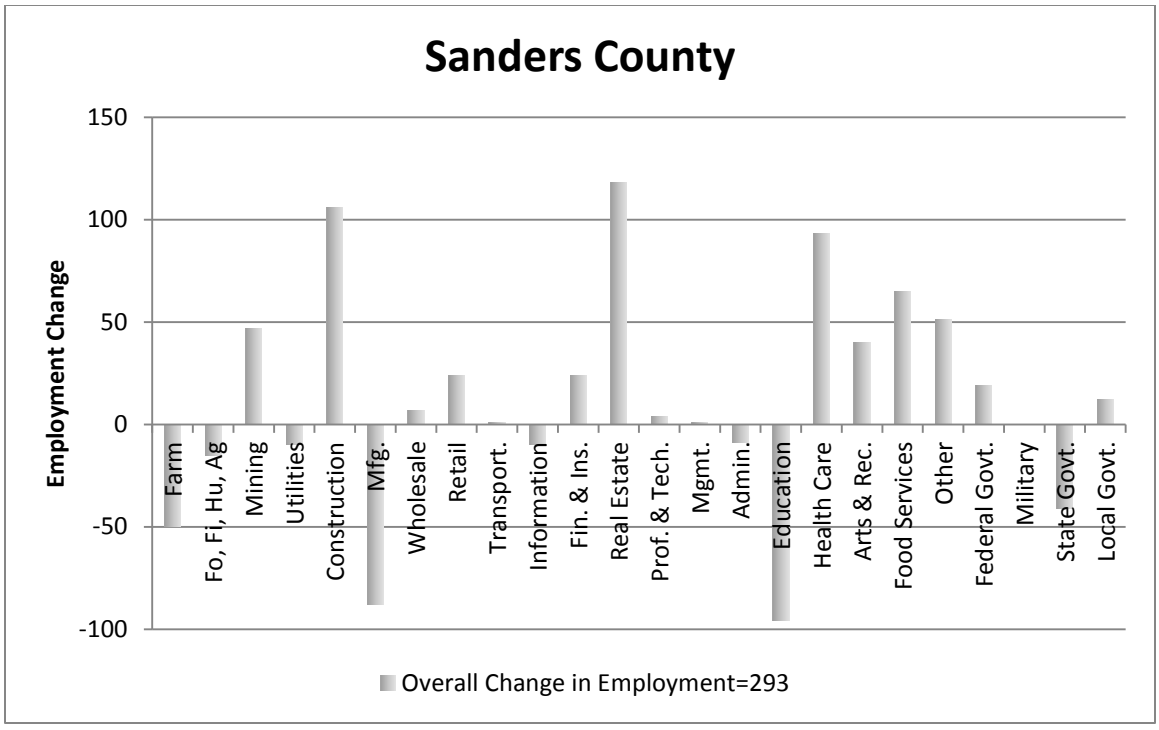


Figure 13: Change in employment by sector for Sanders County, 2001-2009
Source: Bureau of Economic Analysis, 2001b, 2009b

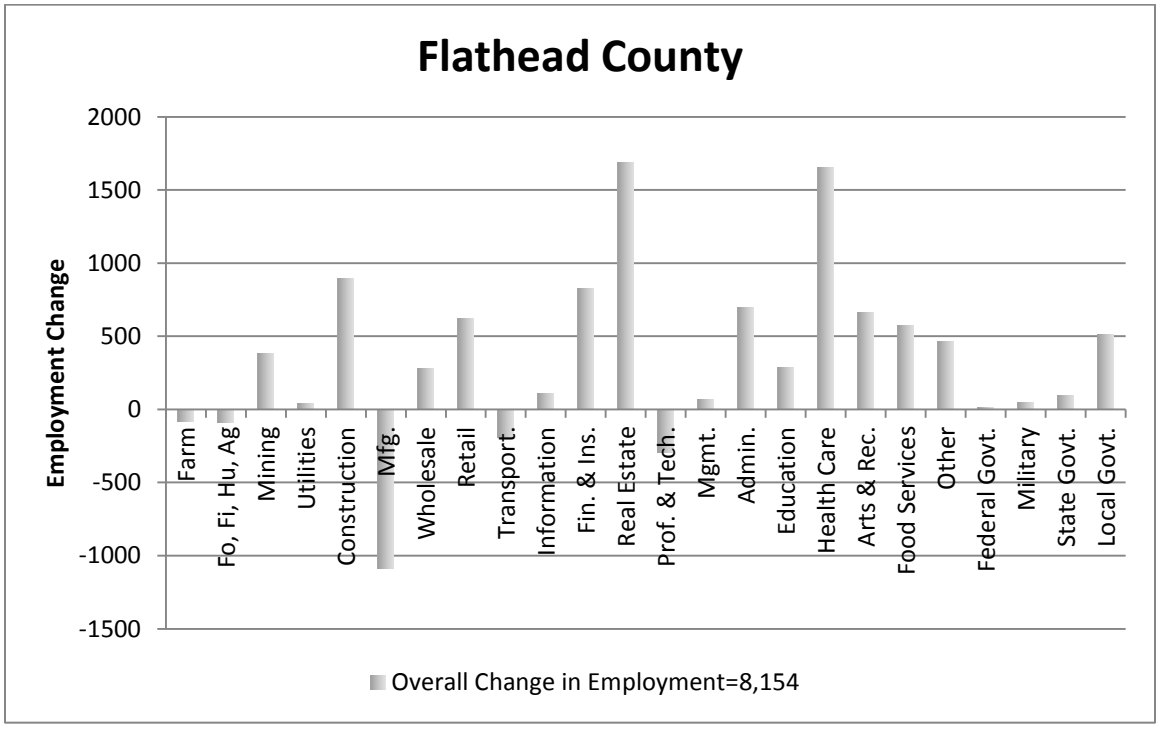


Figure 14: Change in employment by sector for Flathead County, 2001-2009
Source: Bureau of Economic Analysis, 2001b, 2009b

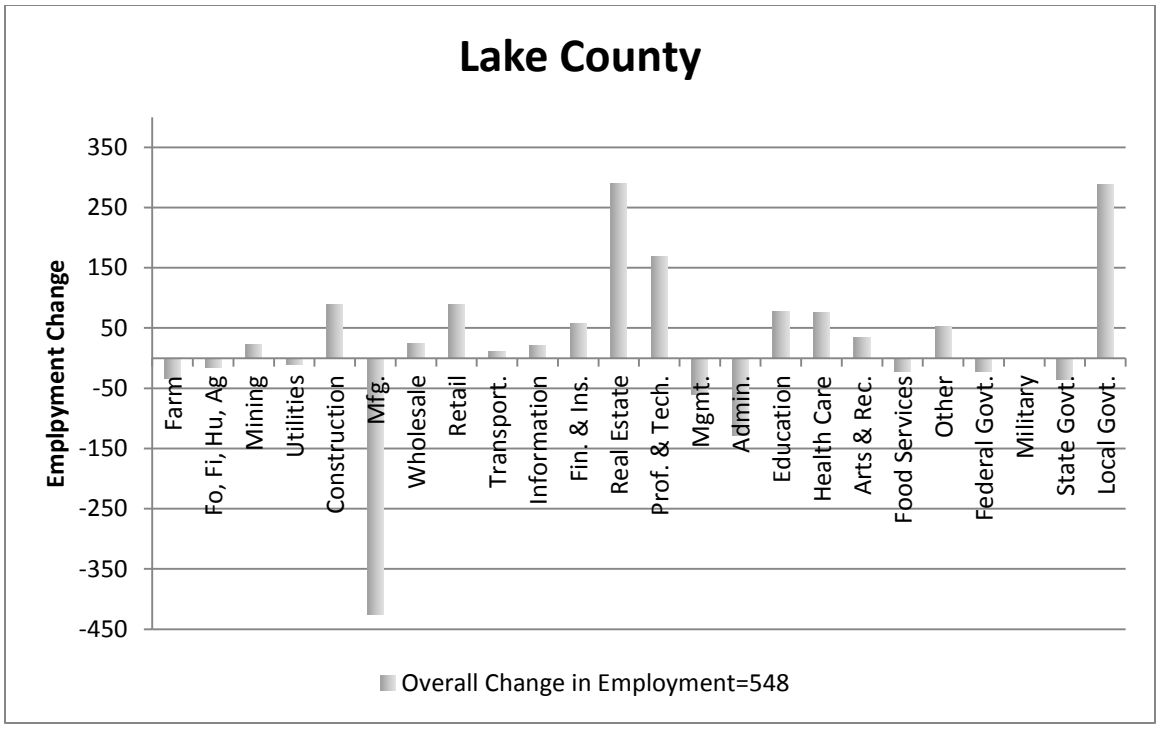


Figure 15: Change in employment by sector for Lake County, 2001-2009
Source: Bureau of Economic Analysis, 2001b, 2009b

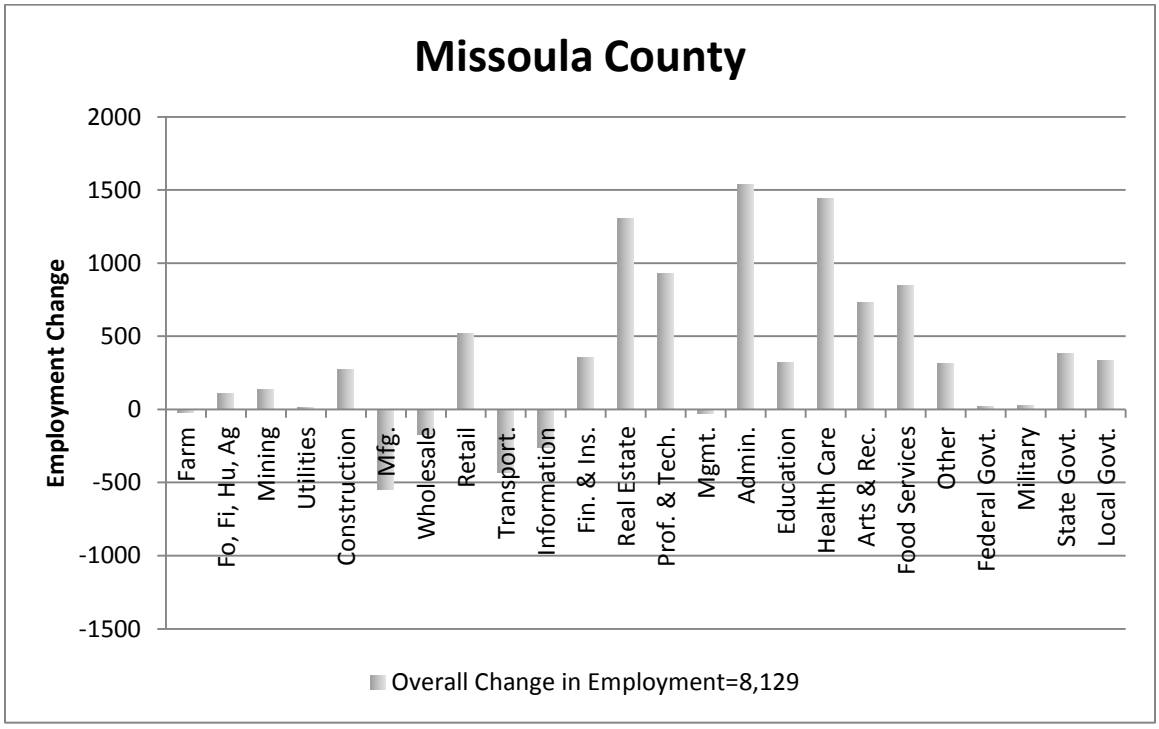


Figure 16: Change in employment by sector for Missoula County, 2001-2009
Source: Bureau of Economic Analysis, 2001b, 2009b

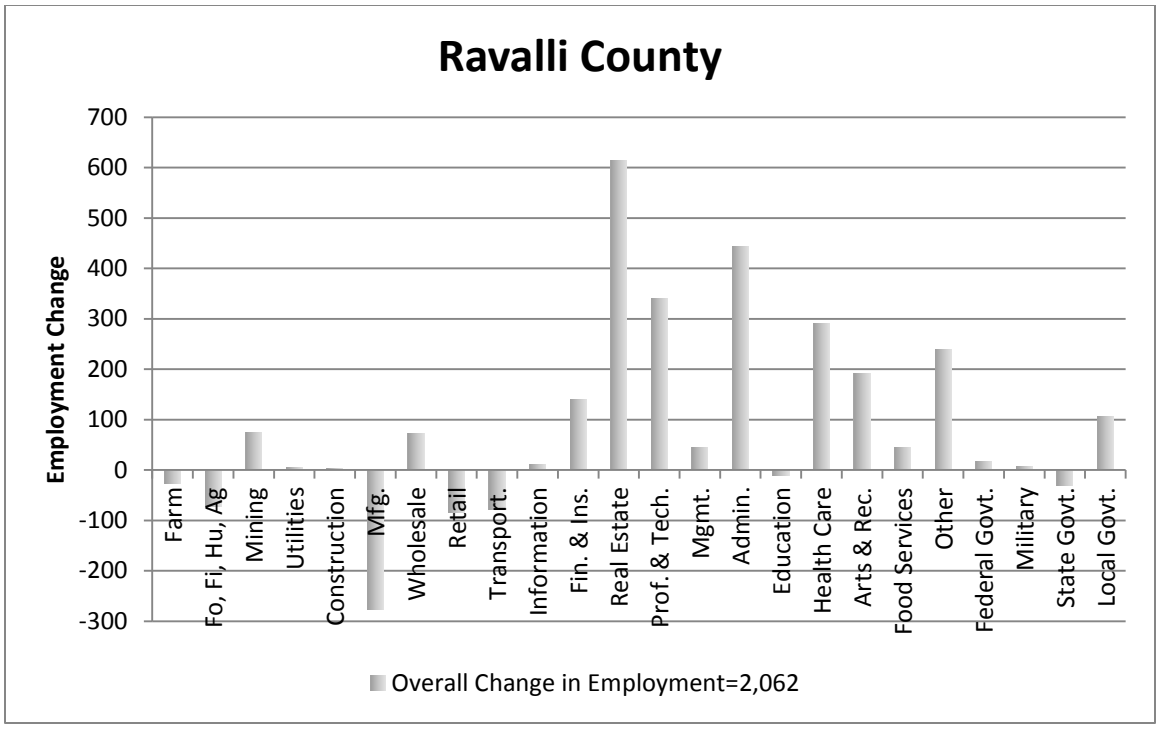


Figure 17: Change in employment by sector for Ravalli County, 2001-2009
Source: Bureau of Economic Analysis, 2001b, 2009b

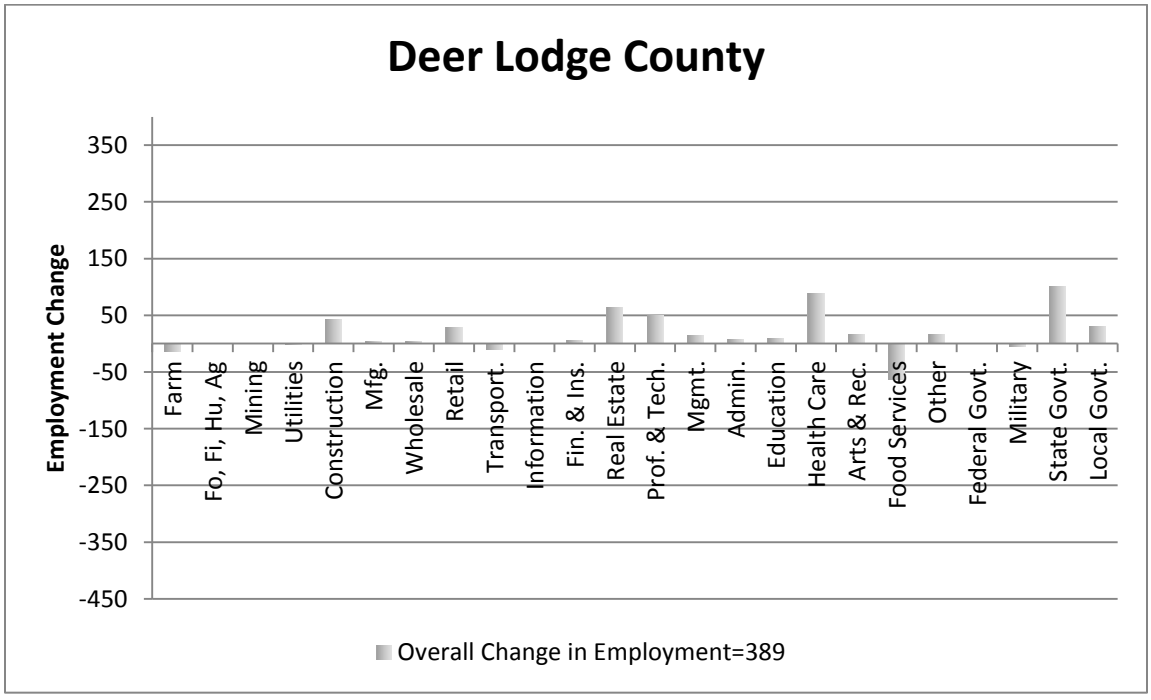


Figure 18: Change in employment by sector for Deer Lodge County, 2001-2009
Source: Bureau of Economic Analysis, 2001b, 2009b

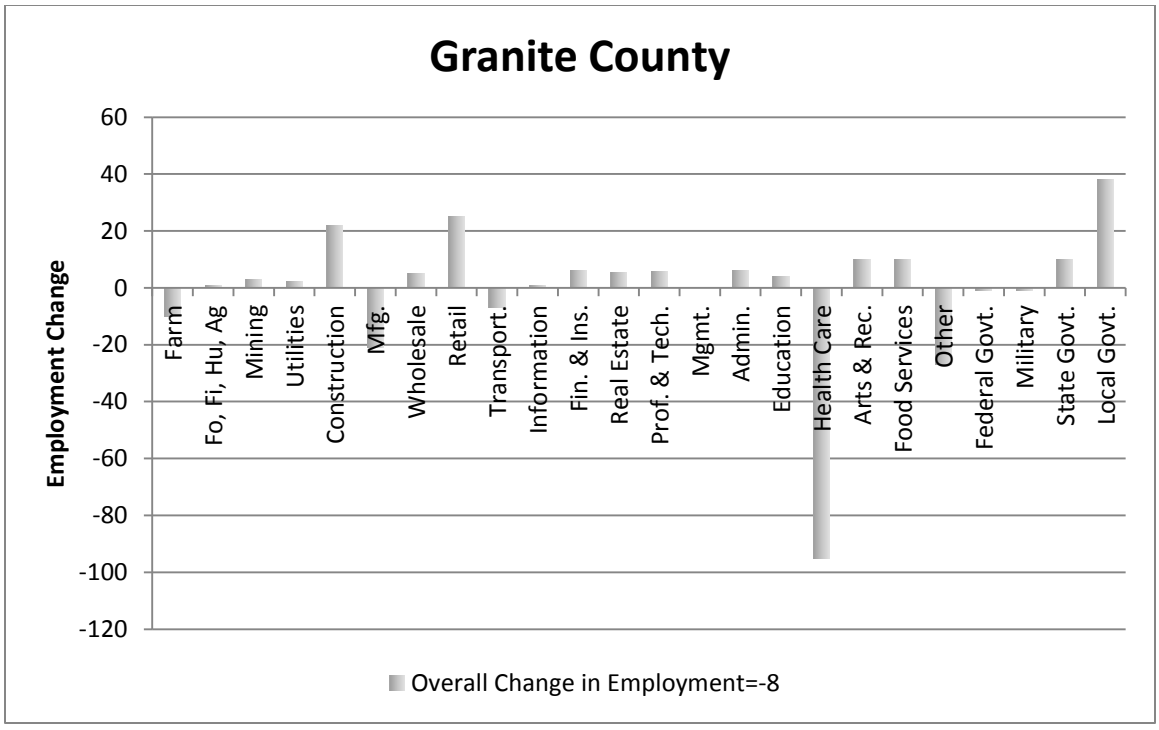


Figure 19: Change in employment by sector for Granite County, 2001-2009
Source: Bureau of Economic Analysis, 2001b, 2009b

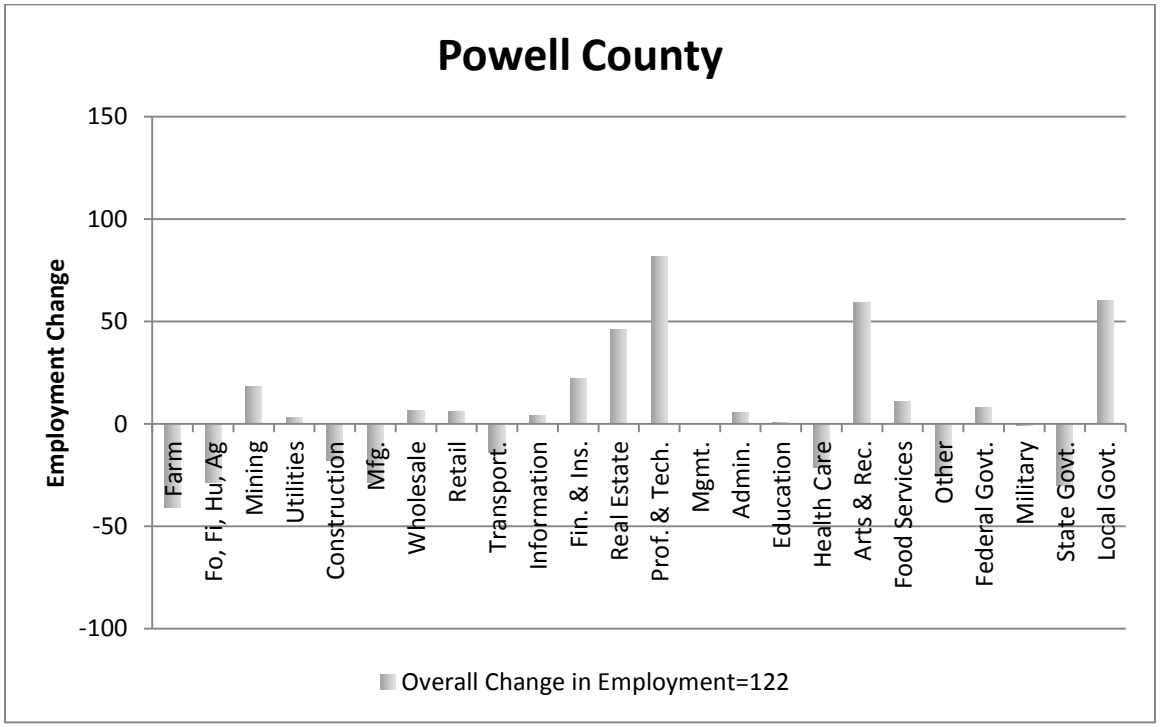


Figure 20: Change in employment by sector for Powell County, 2001-2009
Source: Bureau of Economic Analysis, 2001b, 2009b

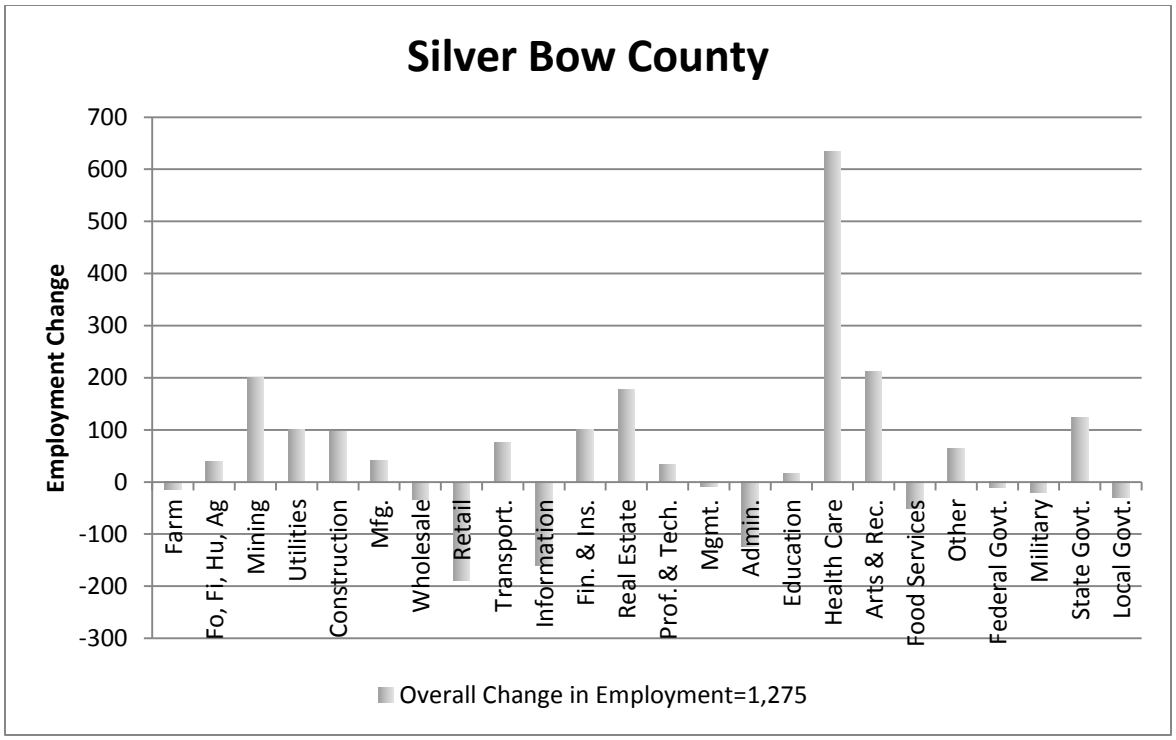


Figure 21: Change in employment by sector for Silver Bow County, 2001-2009
Source: Bureau of Economic Analysis, 2001b, 2009b

Implications

Employment throughout the watershed grew during the last decade, though it is difficult to determine how much in comparison to the 1990's, as data classifications between the two periods have changed and are not directly comparable. Regardless, a significant portion of employment in the watershed is in industries that fall under the umbrella of services. Service sector employment includes a broad array of employment types that include both high and low paying jobs that could be anything from a retail clerk to a real estate agent, a fishing guide to a lawyer. This implies that the distribution of prosperity through employment in these sectors is uneven, though it is also argued that more diversified economies are more resilient in the face of downturns or recessions.

The worst performing sector throughout the watershed through the decade was manufacturing, which it should be noted includes working with lumber and forestry products. It is interesting that the decline in manufacturing jobs was not accompanied by a similar downturn in construction employment, which was the same proportion of the overall economy in 2009 as it was in 2001. In comparison, several sectors which are associated with the New West saw considerable growth in the past decade. These include real estate, finance, and arts and recreation. The growth in these sectors suggests that in much of the watershed, the composition of the economy continued to transition towards one with New West characteristics.

Unemployment

Justification and Context

Looking at unemployment rates in the watershed provides an indication of the state of the economy and whether or not are jobs for residents in the labor force providing them with earnings to be able to afford to live there. Unemployment may be caused by national trends, such as the recession, or due to regional or local downturns. New West economies are increasingly more diversified in which economic sectors they include, usually based more in service sector industries. While some service jobs are potentially less affected by economic downturns than industries based in resource extraction or construction and manufacturing, other service jobs may be strongly affected by economic downturns, such as those in tourism or real estate.

Unemployment rates are derived from the number of people in the labor force, and discern the percent of individuals who are jobless, looking for jobs and able to work. This means that individuals who are not actively looking for work, whether because they have become frustrated or have been unemployed long enough that they are no longer eligible for

unemployment benefits, are not counted in unemployment rates. Because of this, unemployment rates tend to underestimate the number of people that are actually unemployed in a community.

The last *State of the River Report* found that unemployment in the 1990's dropped substantially from previous decades, and that the greatest drop occurred after the 1970's (Clark Fork Coalition, 2005). The unemployment rate for the watershed area in 2000 was 6.6 percent. Unemployment rates for individual counties were varied, with Deer Lodge and Sanders counties having the highest rates at around 10 percent. The watershed rate of unemployment was higher in 2000 than both the national and Rocky Mountain region rates.

Unemployment data come from the BEA's Division of Labor Statistics, and the Montana Department of Labor and Industry. Data is provided on both an annual and monthly basis. Annual rates chart the overall rise or drop in the number of unemployed individuals, and are important in order to see the general pattern of unemployment between 2000 and 2010. Monthly rates help identify whether there is a seasonal pattern of unemployment, which provides information on the types of employment sectors that local communities rely upon. For example, if unemployment is lower during the summer period, this could imply that recreation and tourism, construction, or seasonal natural resources jobs play an important role in a community's economy.

Findings

Between 2000 and 2010, the Clark Fork watershed saw an overall increase in annual unemployment from five percent to 9.1 percent. This was a greater increase than the State of Montana, but less so than for the nation as a whole (see Figure 22). The lowest numbers in unemployment during the decade were seen in 2006, and unemployment rates rose drastically beginning in 2008, corresponding with the national recession.

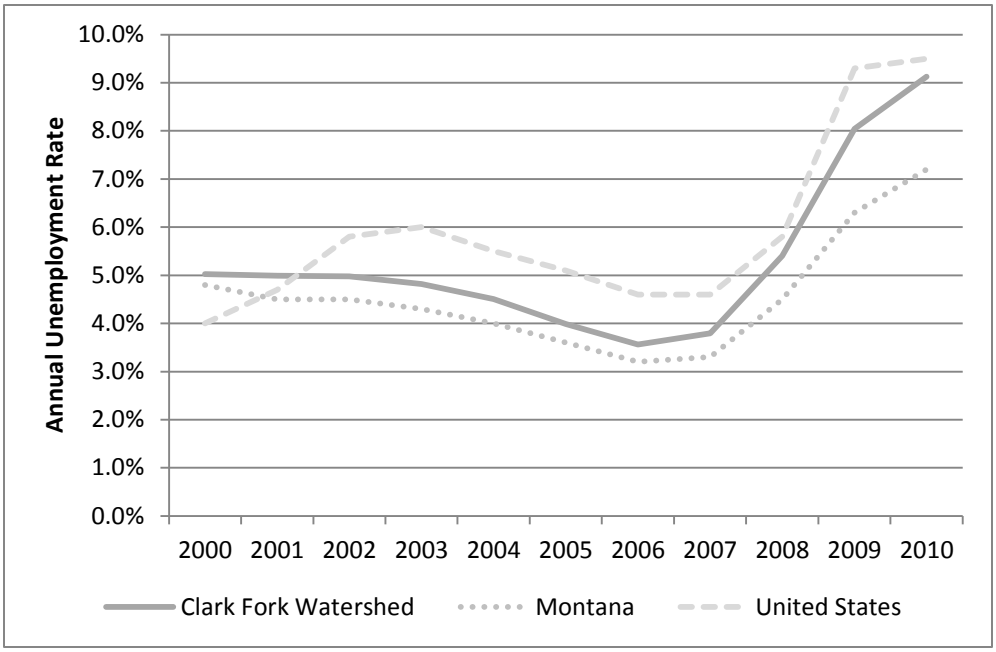


Figure 22: Annual unemployment rates for the watershed and reference regions, 2000-2010
Source: Montana Department of Labor Statistics, 2012

Unemployment rates for individual counties within the watershed were varied. Counties with larger populations and counties with smaller populations both showed disparity in their unemployment rates. Four counties reached unemployment rates greater than 10 percent by 2010. These included Flathead County, the second most populous county in the watershed, and Mineral County, one of the least populated. Similarly, Silver Bow and Missoula counties, both of them more populous, were less affected by unemployment, whereas Deer Lodge, which has been losing population for the last several decades, also saw lower unemployment rates through the decade (see Figure 23). In fact, only four out of the ten counties in the watershed saw lower unemployment rates than the watershed rate, but because these include Missoula and Silver Bow counties, which contain the first and third largest populations in the watershed, they bring the overall rate for the watershed down.

Looking at monthly unemployment numbers provides an understanding of the seasonal fluctuations in employment, which has implications for the nature of employment patterns in a

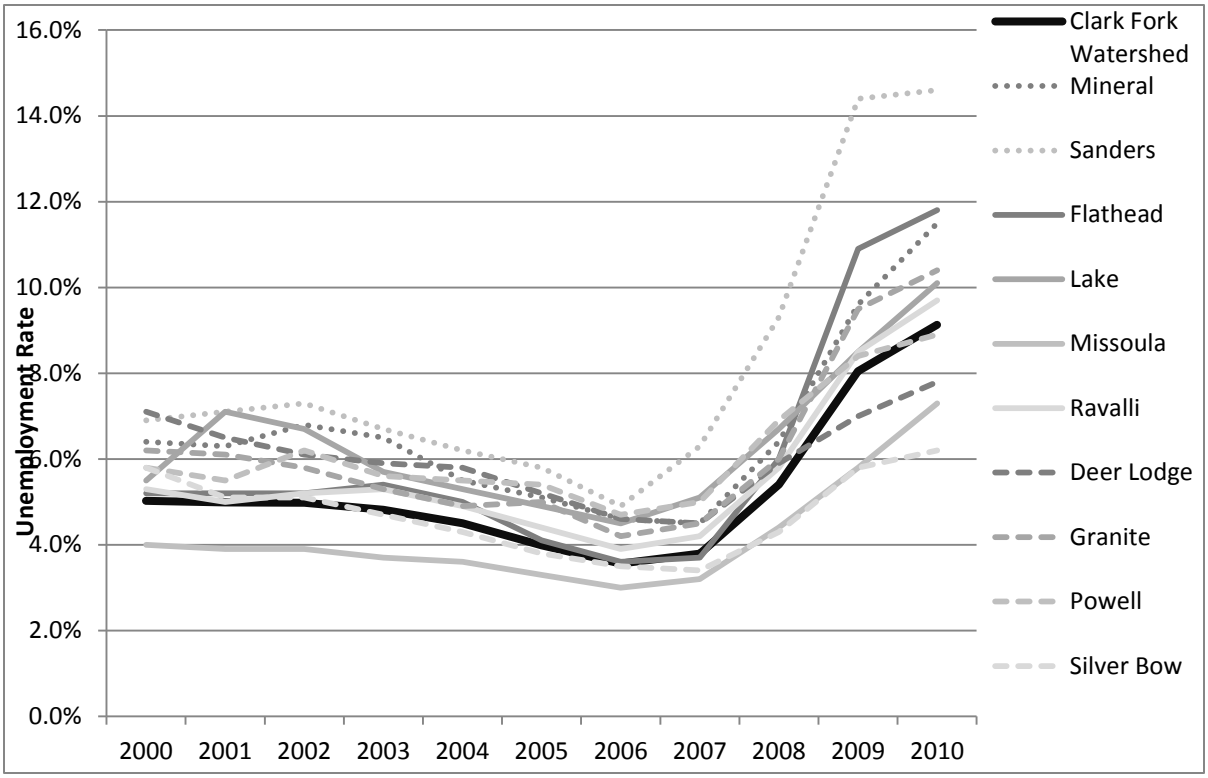


Figure 23: Annual unemployment rates by county, 2000-2010
Source: Montana Department of Labor Statistics, 2012

community. Through the last decade, the Clark Fork watershed maintained a pattern of lower unemployment numbers in the late spring and summer months and higher unemployment through the winter (see Figure 24). This means that starting in 2008, as overall unemployment rose in the watershed, the seasonal unemployment peaks reached an even higher level than the annual rate implies. The highest unemployment for the watershed as a whole occurred in January of 2011, at 11.2 percent unemployment.

Implications

The Clark Fork watershed suffered a considerable rise in unemployment at the end of the past decade. Though the watershed unemployment rate was higher than the State of Montana, it stayed lower than the national average. However, considerable variation amongst the individual counties in the watershed suggests that the distribution of unemployment throughout the watershed was highly uneven. In many ways, discerning a pattern for this uneven distribution

from a New West perspective is difficult. Although many of the counties in the watershed that

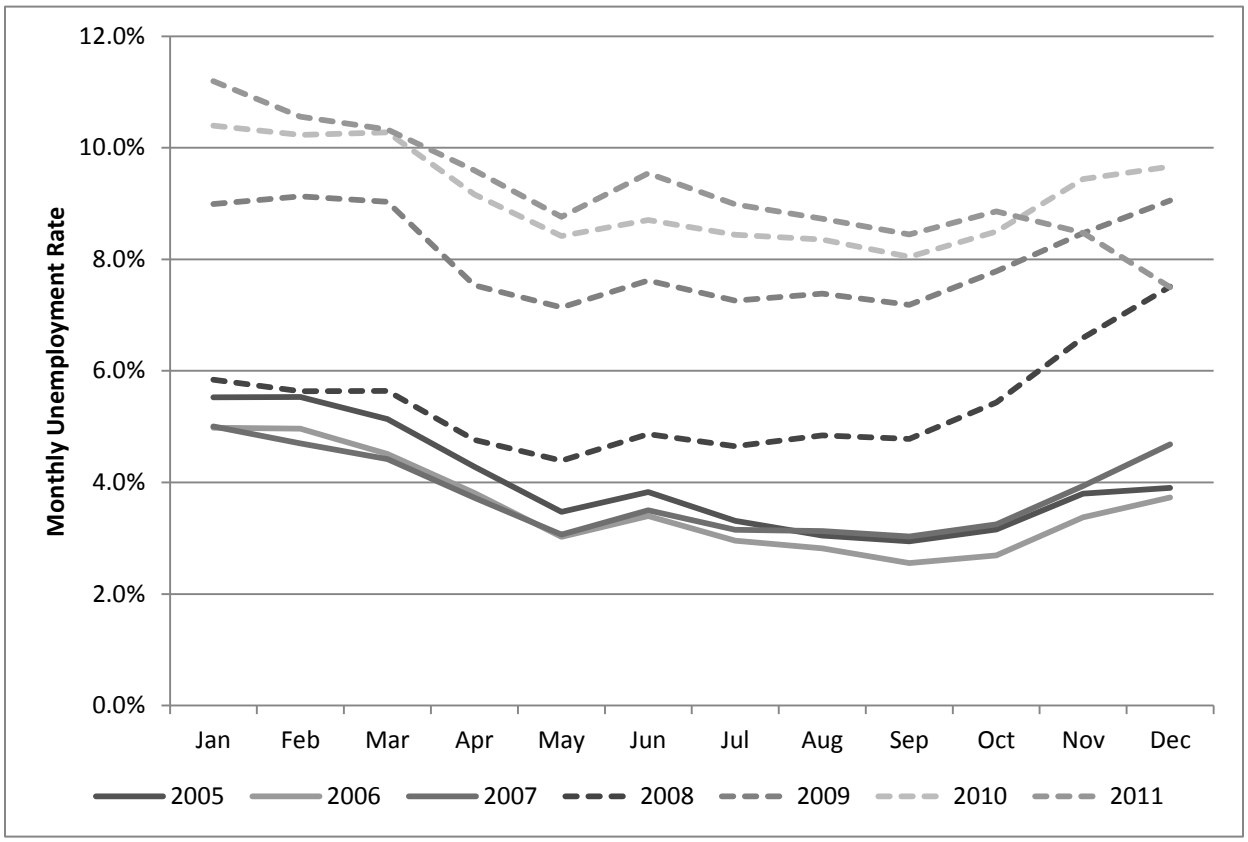


Figure 24: Monthly unemployment for the Clark Fork watershed, 2005-2011
Source: Montana Department of Labor Statistics, 2012

would be considered to exhibit New West characteristics saw high levels of unemployment, it was not the case across the board. Missoula County, the most populous county in the region with a high level of access to natural amenities and urban services saw one of the lowest increases in unemployment in the decade. Similarly, Silver Bow County, perhaps considered the most Old West county in the region, saw the absolute lowest rise in unemployment.

One possible explanation for the uneven distribution of unemployment over the past decade may relate to which counties rely more heavily on the secondary employment sectors, such as construction and manufacturing. The two counties in the watershed with the highest levels of unemployment at the end of the decade were Flathead and Sanders counties, both of

which rely heavily on these types of industries. Another explanation would be that areas with high population growth have high unemployment, whereas those with low population growth have low unemployment. This is because in-migration increases the labor force though not necessarily the amount of employment opportunities, whereas outmigration will decrease the labor force. Although this doesn't explain the low unemployment rate in Missoula County, it does offer insight in to why this may be the case for those counties in the Upper Clark Fork sub-basin.

Income Characteristics

Income characteristics are an important indicator for gauging the extent of New West dynamics in the watershed. Communities that exhibit New West qualities are defined by a transition from an economy based on production to one of consumption. This transition is thought to be enabled by an increase in income that is not necessarily tied to the extraction of local resources or the local community. Rather, income gained through other means, such as stocks and dividends or increases in home equity, has provided the ability for individuals and businesses to be mobile and footloose, which in turn is aided by improvements in communications technologies. The existing New West analysis suggests that the income that is generated from these outside, non-production sources is generally concentrated in the communities that are attractive to incoming individuals, especially because of their accessibility to natural amenities. This suggests that income is unevenly distributed throughout a region that is experiencing New West dynamics, such as the Clark Fork watershed.

This raises the importance of examining the role that non-labor income, or income that is generated through means other than wages and salaries, plays in the watershed. Non-labor income is one of the most prominent indicators for gauging New West influences, as it is seen to be the driving force behind the economic shift from production to consumption in New West communities. However, though the presence of non-labor income may indicate the growth and concentration of wealth in an area, it may also be an indication of hardship and need, as non-labor income also includes government subsidies, such as food stamps. Additionally, non-labor income includes social security. For this reason, it is especially important to compare patterns associated with non-labor income with indicators for poverty in order to better understand to

what extent issues such as income inequality within the region may be associated with New West dynamics.

Earnings and Median, Per Capita, and Family Income

Justification and Context

Measuring the change in median, per capita, and family income gives an idea of whether the economic well-being of a community is improving or not, and the extent to which there is income inequality throughout the region. In order to adjust for inflation over the decade, the values for 2000 income data have been adjusted to 2010 dollars. According to the Bureau of Labor Statistics, $1 in 2010 had the impact of $1.27 in 2000 (Bureau of Labor Statistics, 2012). So, for example, a family making between $25,000 and $75,000 in 2010 would have a similar spending power to if they made between $20,000 and $60,000 in 2000.

The previous *State of the River Report* found that per capita income had increased since the previous two decades, that the counties with the highest median incomes were those with larger urban centers, and that median family income had generally increased in the 1990's after having decreased in the 1980's.

Findings

Figure 25 shows the change in average earnings in the watershed and greater reference regions between 1990 and 2010, adjusted for inflation. In keeping with a trend of relatively stagnant wage increases throughout the nation, the watershed especially shows little growth in earnings between 1990 and 2010. Although this is also a national issue, it is another facet of New West dynamics that labor earnings have not changed much over the past several decades.

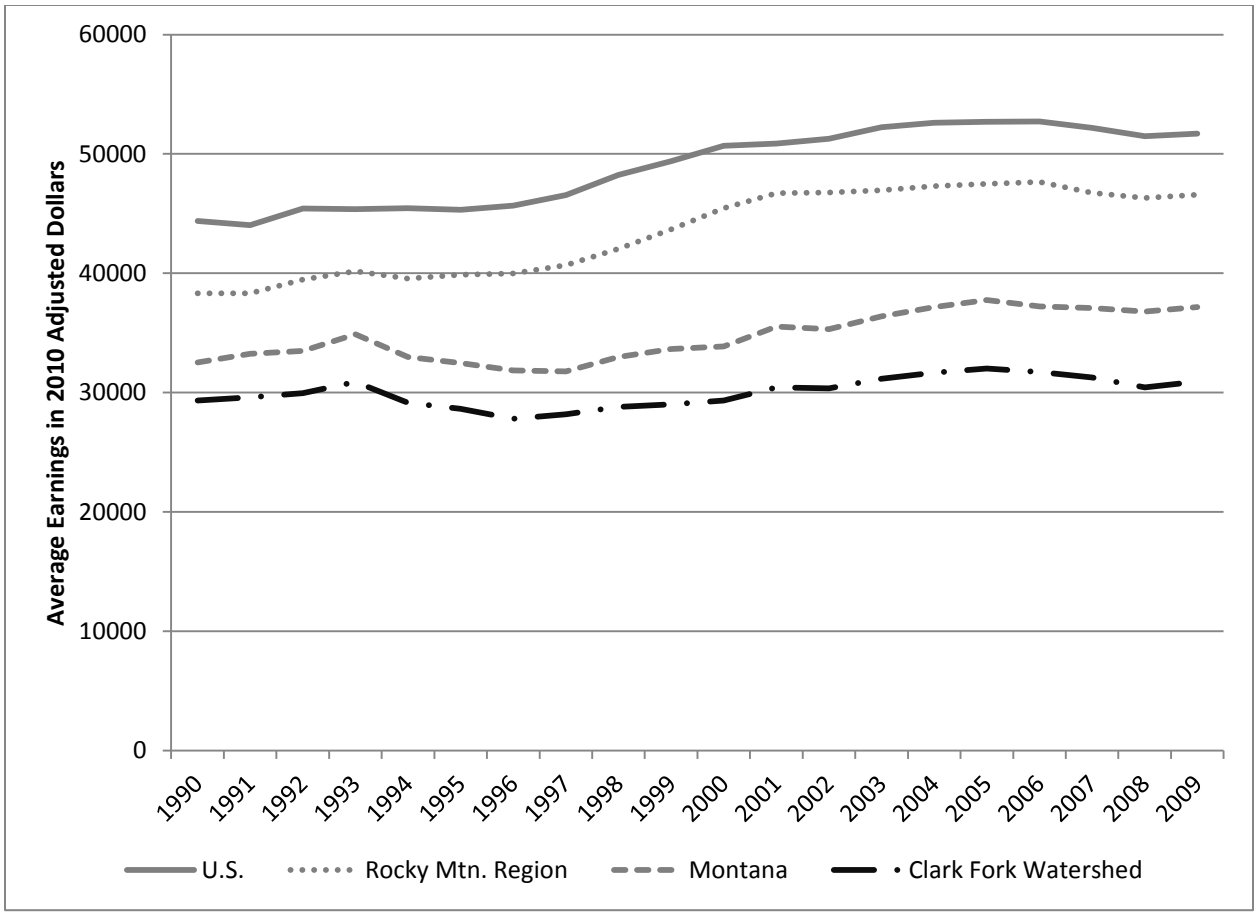


Figure 25: Average earnings for the Clark Fork watershed and greater reference regions, 1990-2010
Source: Bureau of Economic Analysis, 2009c

Using 2010 adjusted dollars, both household and median income levels generally increased throughout the watershed between 2000 and 2010, though not in all cases, and never by much (see Tables 14 and 15). In reference to larger regions, the Rocky Mountain region and the country as a whole showed the greatest rate of decline in household median income, though this is likely because those reference regions had much higher median incomes in 2000 than most counties in the watershed. However, median household income for the State of Montana grew by five percent, and its per capita income grew by nine percent. Measuring change in income levels in the watershed against those for the State of Montana seems most illuminating,

as original income levels in Montana were most closely matched to those within the watershed in 2000.

Median Household Income (Adjusted for inflation to 2010 dollars)				
Geography	2000	2010	Difference	Percent Change
United States	53,151	51,914	-1,237	-2.3
Rocky Mountain Region	52,612	51,876	-736	-1.4
Montana	41,928	43,872	1,944	4.6
Mineral County	34,815	37,256	2,441	7.0
Sanders County	33,438	30,622	-2,816	-8.4
Flathead County	43,964	44,998	1,034	2.4
Lake County	36,045	37,274	1,229	3.4
Missoula County	43,890	42,887	-1,003	-2.3
Ravalli County	41,007	43,000	1,993	4.9
Deer Lodge County	33,238	35,310	2,072	6.2
Granite County	34,844	36,052	1,208	3.5
Powell County	38,815	39,851	1,036	2.7
Silver Bow County	38,937	37,986	-951	-2.4

Table 14. Median household income at regional and county levels, 2000 and 2010
Source: United States Census Bureau, 2000g, 2006-2010b

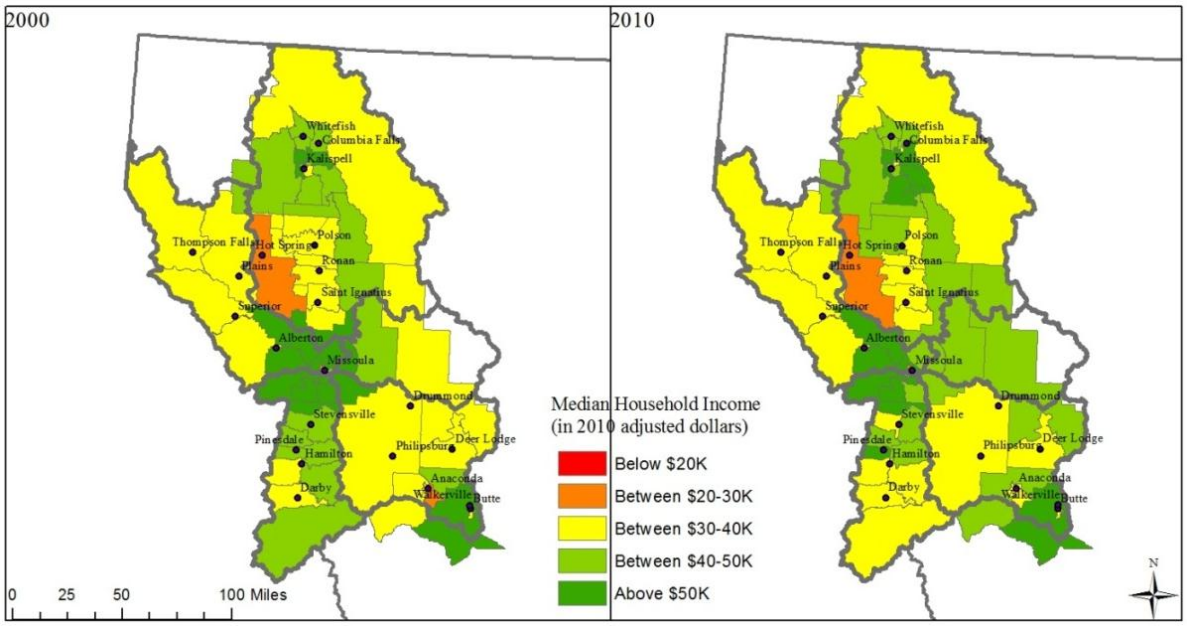
Examining median and per capita income provides a foundation for understanding income levels in the watershed, but it lacks geographic or spatial information discerning income distribution and inequality. Maps 12 and 13 show the changes in distribution of income at the census tract level throughout the watershed between 2000 and 2010. Of special consideration here is the way in which these income patterns interact with the distribution of population in the basin. Areas that are much more populous than others, such as the urban communities along the Highway 93 corridor should be considered carefully in comparison to those of similar income levels but with sparser population numbers. It is of note that median household income levels essentially stayed at similar levels as to where they were in 2000, and in some areas fell to lower

levels, whereas per capita income, though generally rising throughout the watershed, occurred with more variability and less consistency throughout the study area.

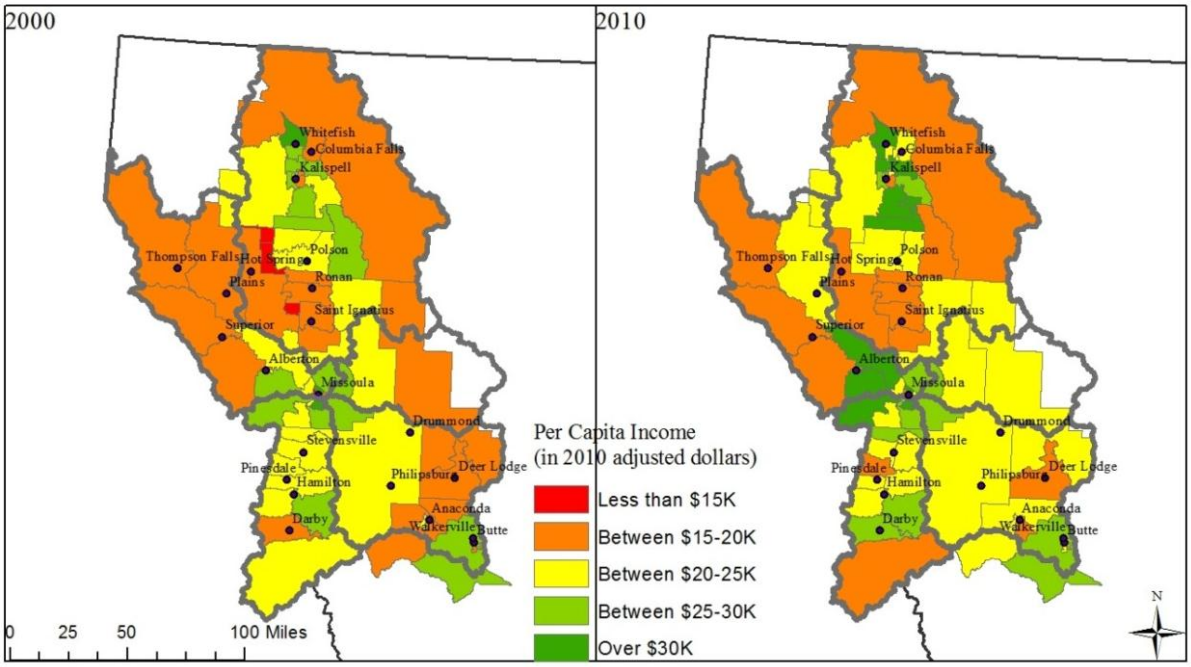
Geography	Per Capita Income (Adjusted for inflation to 2010 dollars) 2000 ($)	2010 ($)	Difference ($)	Change (%)
United States	27,415	27,334	-81	-0.3
Rocky Mountain Region	25,958	26,110	152	0.6
Montana	21,782	23,836	2,054	9.4
Mineral County	19,261	19,209	-52	-0.3
Sanders County	18,533	18,472	-61	-0.3
Flathead County	23,002	24,721	1,719	7.5
Lake County	19,270	20,164	894	4.6
Missoula County	22,616	24,343	1,727	7.6
Ravalli County	22,777	23,908	1,131	5.0
Deer Lodge County	19,787	21,921	2,134	10.8
Granite County	21,128	23,222	2,094	9.9
Powell County	17,546	17,849	303	1.7
Silver Bow County	21,601	21,357	-244	-1.1

Table 15. Per capita income and change in income at the regional and county levels, 2000 and 2010
Source: United States Census Bureau, 2000i, 2006-2010a

Maps 12 and 13 show that the distribution of income at a more detailed scale was already distributed unevenly in 2000 and continued to be so in 2010, in some areas more severely. However, since median income only provides a single income value for an entire area, a more nuanced picture is given by examining the proportion of households within each census tract by actual income. The following maps attempt to gauge the extent to which income inequality increased or decreased throughout the watershed between 2000 and 2010. To do this, I measure the number of households with income levels that fall within three specific windows. These windows are the percentage of households with incomes less than $25,000, households with incomes between $25,000 and $75,000, and households with incomes higher than $75,000. The window between $25,000 and $75,000 is meant to be a rough estimate of the "middle class" in the watershed. The $25,000 cutoff on the low end is relevant given that in 2010, the weighted

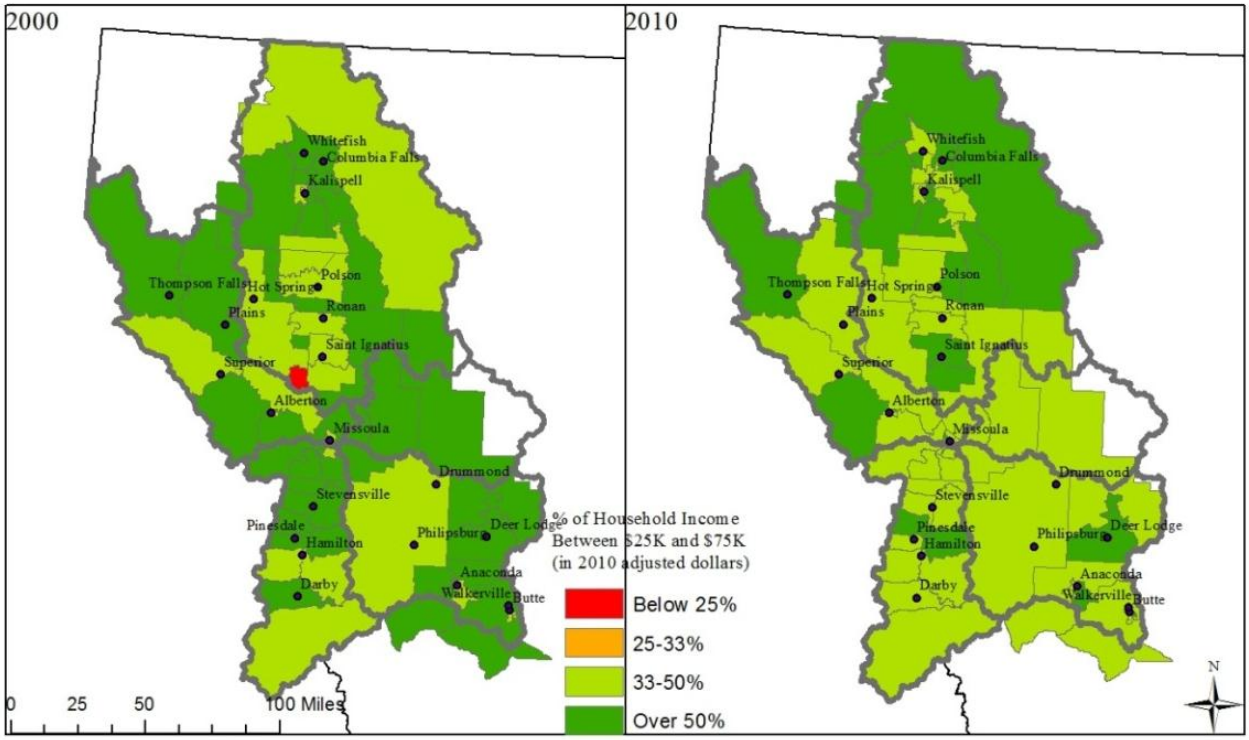


Map 12: Median household income by census tract in the Clark Fork watershed, 2000 and 2010
Source: United States Census Bureau, 2000g, 2006-2010b, Census Tract Level



Map 13: Per capita income by census tract in the Clark Fork watershed, 2000 and 2010
Source: United States Census Bureau, 2000i, 2006-2010a, Census Tract Level

poverty threshold for a family of four was $22,314, and in 2000 was weighted at a lower amount (United States Census Bureau, 2012). The 2000 data for these maps has been adjusted to reflect



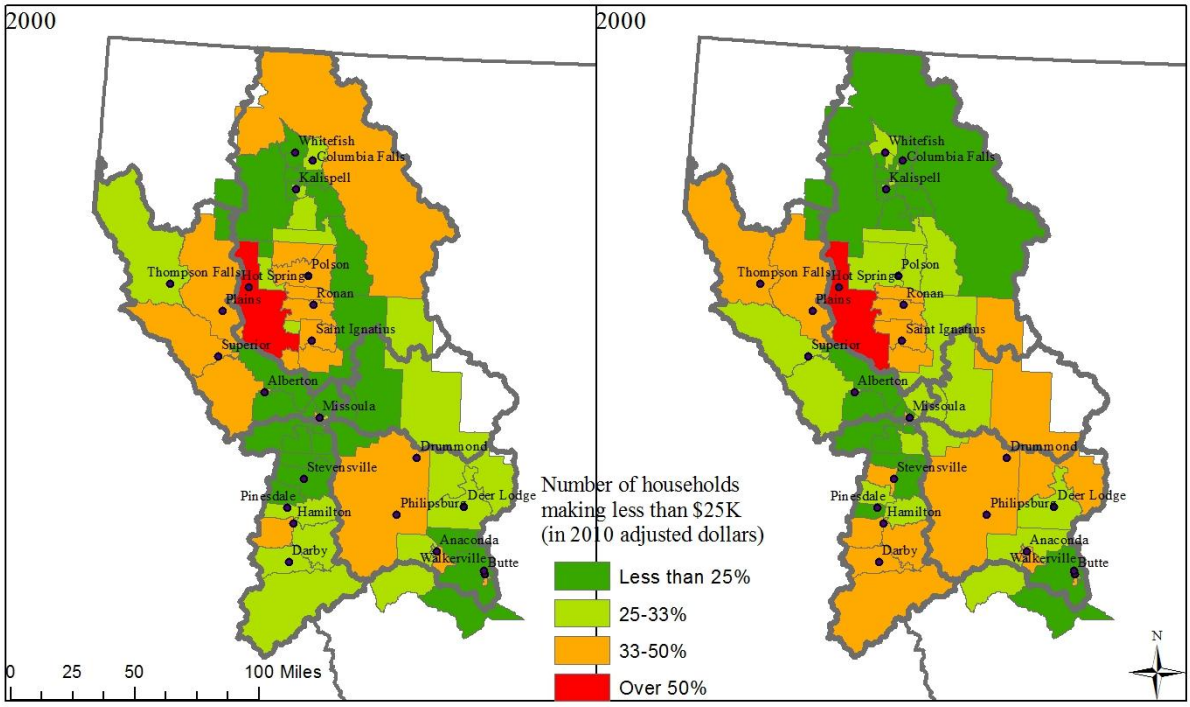
Map 14: Percent of households making income between $25,000 and $75,000, 2000 and 2010
Source: United States Census Bureau, 2000g, 2006-2010b, Census Tract Level

2010 spending power, so that the equivalent windows cutoffs for 2000 are $20,000 and $60,000 in 2000 non-adjusted dollars.

Map 14 follows the distribution of households making between $25,000 and $75,000. In 2000, at the census tract level a majority of the watershed saw over half of all households within this "middle class" category. Notable areas where between a third and a half of households were "middle class", or in other words less than half, were some tracts in the more urban areas such as Missoula and Kalispell, many tracts within the Flathead Reservation, and the southern end of the Bitterroot sub-basin. During the past decade, noticeably less of the watershed saw over half of all households stay within this middle class window. This change occurred specifically in the region in and around Missoula County, in the Upper Clark Fork sub-basin, and in the area in and surrounding the more urban centers in the Flathead sub-basin. All of this area fell from showing over 50 percent of households within the middle class to between 33 and 50 percent. This

implies a growing distribution of income inequality in the past decade, especially with regard to the more urban communities throughout the basin.

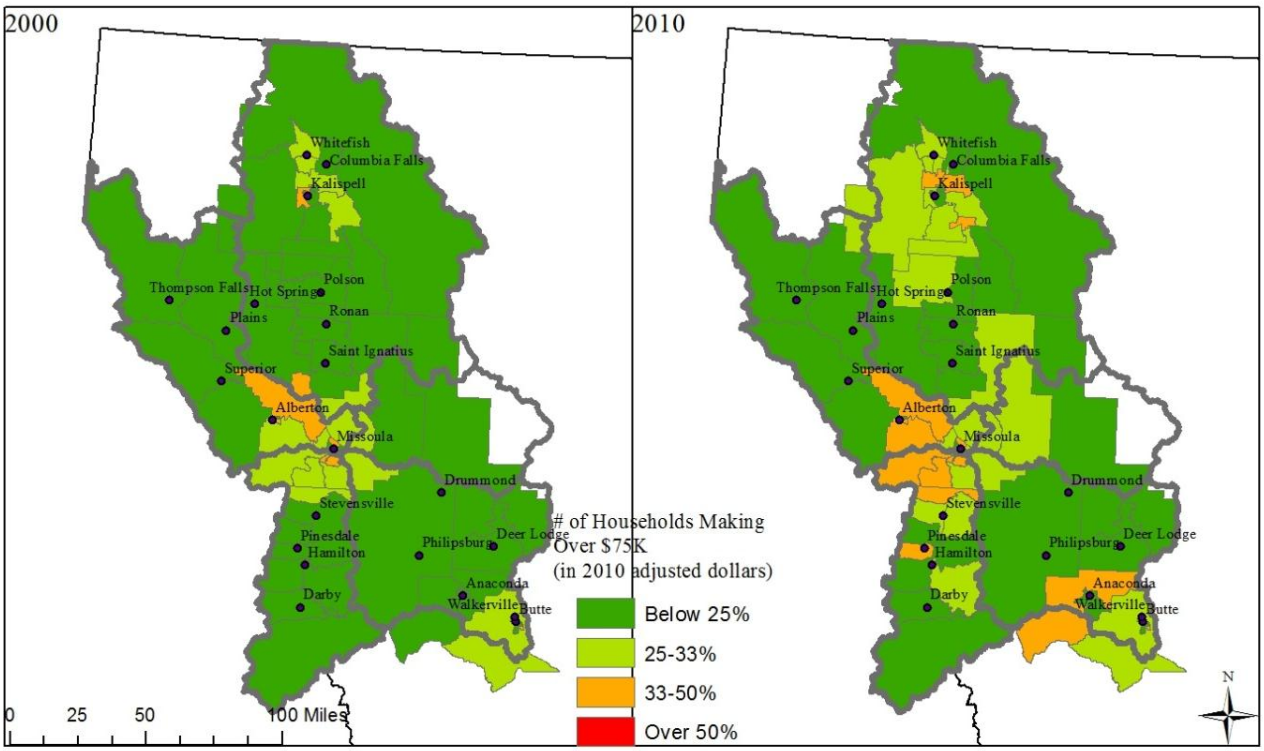
The question then becomes, in which direction on the income spectrum did this inequality skew towards over the past decade. Maps 15 and 16 shows the change in distribution of the two other income windows being discussed here, those being for household earning less than $25,000, and households earning more than $75,000 for 2010 adjusted dollars. It should be pointed out that the legends for these maps are reversed from Map 14 in order to draw attention to those areas that have an especially high number of households outside of the "middle-class" window.



Map 15: Number of household making less than $25,000
Source: United States Census Bureau, 2000g, 2006-2010b, Census Tract Level

These maps show that the percentage of households within both windows grew throughout the watershed, sometimes in separate areas and sometimes overlapping. The percentage of households making less than $25,000 increased most notably in the Blackfoot,

Upper Clark Fork, and Bitterroot sub-basins, and decreased considerably in the Flathead sub-basin. At least all of the tracts in the more urban area of Missoula County stayed at between a third and a half of households making less than $25,000 and some tracts shifted to containing more than that. A similar pattern occurred in the more urban areas of Flathead County. The percentage of households making more than $75,000 grew most specifically in the areas around the urban centers in the watershed, such as Kalispell and Missoula. Deer Lodge County also showed more than a third of its households making more than $75,000 in 2010.



Map 16: Number of households making more than $75,000
Source: United States Census Bureau, 2000g, 2006-2010b, Census Tract Level

Implications

On a watershed level, income generally rose throughout the basin, although this occurred in an uneven pattern. Although most counties saw less growth in income than the State of Montana, both in terms of per capita and median household income, they did tend to see higher

rates of growth than both the United States and the Rocky Mountain regions. At a more detailed scale than the county level, income distribution in the watershed, which was already unevenly dispersed in 2000, became more so. Using a rough estimate for changes to the "middle class" as households earning between $25,000 to $75,000 in 2010 adjusted dollars, a majority of the watershed showed less than half of households in individual census tracts receiving income in this middle class range by the end of the decade. This implies that the distribution of incomes levels was increasingly more uneven by the end of the decade, and spatial patterns of where household income grew above and below this middle class window confirmed this increase in income inequality. In contrast, average earnings for the watershed rose by only a few dollars compared to what they were in 1990. This highlights the growing role that non-labor income can play in the region in bringing about changes associated with the New West.

Income inequality is an important piece of the puzzle in relation to New West social dynamics. Disparity in income levels is cause for social tension in most situations, but with regard to the New West it is most notable in the effect it can have by aiding in the transition from a production based economy to one based on consumption. Additional stresses for lower-income residents can include rising property taxes due to neighboring up-scale developments, and increased inaccessibility of services due to higher costs, not to mention the cultural changes that often accompany increased socio-economic polarization in a community.

At the center of these considerations is the extent to which development and demographic change that occurs in relation to New West dynamics is concentrated within a greater region. The findings presented here certainly seem to suggest that there is a concentration of income in those areas in and mostly around the more urban centers in the basin. Specifically, this is seen around Missoula, and Kalispell, as well as in the Bitterroot sub-basin and the Seeley Lake region.

The impacts that such patterns of concentration may have are central to understanding the nature of changes associated with the New West. This pattern is less clear with regard to the area around Butte, which shows other indicators that indicate less of a New West status. It could be that the traditionally Old West economic sectors that are more dominant in that region have grown stronger in the past decade, even though they are not necessarily tied to the energy boom occurring in the eastern part of the state. Or perhaps the Butte region is indeed transitioning in some ways towards becoming more New West.

It is important to associate income characteristics with those of population. Though it is clear that income is unevenly dispersed throughout the watershed, it is also evident that this reflects the very uneven distribution of population size and composition. It is notable that the urban areas in the watershed, especially those of Missoula and the Kalispell-Whitefish region, show increases in the number of households with income levels below $25,000, whereas the more rural and exurban areas around those urban centers all grew as well for the number of households with incomes over $75,000. Looking at the per capita income of the communities in the watershed helps to equalize the differences in population size, but does not account for the impact of non-labor versus labor-related earnings, nor does it take into account the number of children or elderly and retired individuals. Some individuals are receiving income that is from retirement pensions or making money from investments, which is an important element of income distribution covered in the next section.

Non-labor Income Sources

Justification and Context

Non-labor income refers to income that is from sources other than employment. This can include both financial gains from investments, such as stock dividends and interest; money

earned from rent; money received from pensions and retirement funds; and government transfer payments, such as food stamps, unemployment benefits, welfare payments, and social security. With regard to how income characteristics help understand the development of New West dynamics in the region, it is necessary to distinguish between non-labor income from assets, which has allowed for the footlooseness that has enabled the dramatic population explosion in the region over the last few decades, from the sources that are more associated with subsidies for lower-income individuals or other transfer payments such as social security. This distinction is examined more thoroughly below. Measuring the relationship between non-labor income from assets against those associated with lower-income populations is an indication of the extent to which income inequality is present in the watershed. Distinguishing between these different sources may also help understand the ways in which population composition varies throughout the watershed. For example, those communities with predominately older populations most likely rely more heavily on retirement payments.

The *State of the River Report* found that the proportion of labor to non-labor income had decreased basin wide since the 1970's. Specifically, in 1970, labor accounted for 63 percent of the total income in the watershed, whereas in 2000 it accounted for 53 percent, just over only half of the total amount of wealth in the area. Some individual counties in the watershed, especially those with predominately older populations, saw the proportion of non-labor income rise considerably, especially those with predominately older populations.

Findings

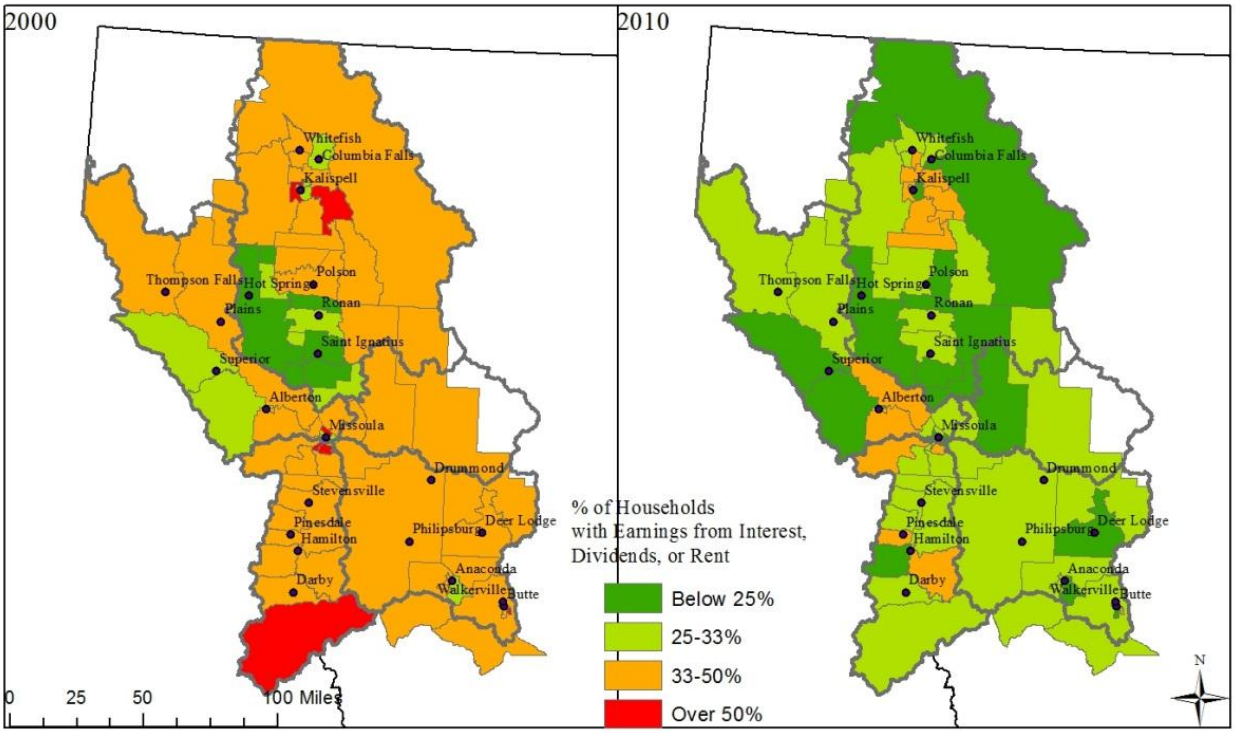
The percentage of overall income in the watershed from non-labor sources grew between 2000 and 2010 (see Table 16). Basin-wide, the proportion of income from non-labor sources out of overall income grew at a higher rate than any of the larger reference areas used for this study,

and there was no individual county in the watershed where non-labor income declined as a proportion of overall income. However, in all cases, from greater reference areas to the watershed to individual counties, the proportion of non-labor income from assets decreased and the proportion of non-labor income from government transfer payments increased. This shift in income sources is not surprising in the face of an economic slowdown brought about by the recession.

	Percent of Per-Capita Income		% of Non-labor income			
	From Non-Labor Sources		From dividends, interest and rent		From transfer payments	
Geography	2001	2009	2001	2009	2001	2009
United States	31.1	35.5	57.0	50.7	43.0	49.3
Rocky Mountain Region	28.5	33.3	64.4	58.1	35.6	41.9
Montana	37.8	41.6	57.9	54.1	42.1	45.9
Clark Fork Watershed	37.9	43.8	56.9	52.7	43.1	47.3
Mineral	48.5	55.0	44.6	32.9	55.4	67.1
Sanders	50.2	57.5	47.4	38.8	52.6	61.2
Flathead	39.0	44.8	61.7	56.5	38.3	43.5
Lake	45.4	53.2	52.4	50.2	47.6	49.8
Missoula	31.0	37.3	59.3	55.6	40.7	44.4
Ravalli	44.0	52.2	58.5	54.3	41.5	45.7
Deer Lodge	48.8	48.8	44.4	38.4	55.6	61.6
Granite	44.9	53.4	55.5	53.5	44.5	46.5
Powell	43.5	46.8	53.1	42.7	46.9	57.3
Silver Bow	39.0	40.5	50.0	46.1	50.0	53.9

Table 16: Percent of per-capita income from non-labor sources reference regions, the Clark Fork watershed, and individual counties, 2001 and 2009
Source: Bureau of Economic Analysis, 2001a, 2009a

On top of a decrease in the percentage of non-labor income from assets, the number of households receiving income from assets decreased as well (see Map 17). In 2000, a majority of the watershed saw at least a third of households by census tract receiving income from interest, dividends or rent, and some areas saw this for more than half of households. In 2010, nearly all of the watershed saw less than a third of households receiving income from assets, and the



Map 17: Percent of households with income from assets
Source: United States Census Bureau, 2000h, 2006-2010d; Census tract level

number of census tracts showing less than a quarter of households receiving income from assets grew, especially in the Flathead and Lower Clark Fork sub-basins. This finding fits with the economic recession as assets likely diminish in value and generate lower or no income.

Working with the distinctions made in the REIS data between overall income and non-labor income from either assets or transfer payments provides a means towards better understanding the patterns of income distribution in the watershed over the past decade. Figures 26 and 27 illustrate the changes in the makeup of per capita income between these three categories, using 2010 adjusted dollars for the 2001 data. As definitions have changed since the 2000 census as to what constitutes public assistance, it is not possible to directly compare the most recent Census Bureau data to that used for the *State of the River Report*. Figure 26 shows that, relatively speaking, overall per capita income stayed stagnant or decreased in the two larger reference regions of the United States and the Rocky Mountain region, but grew somewhat in

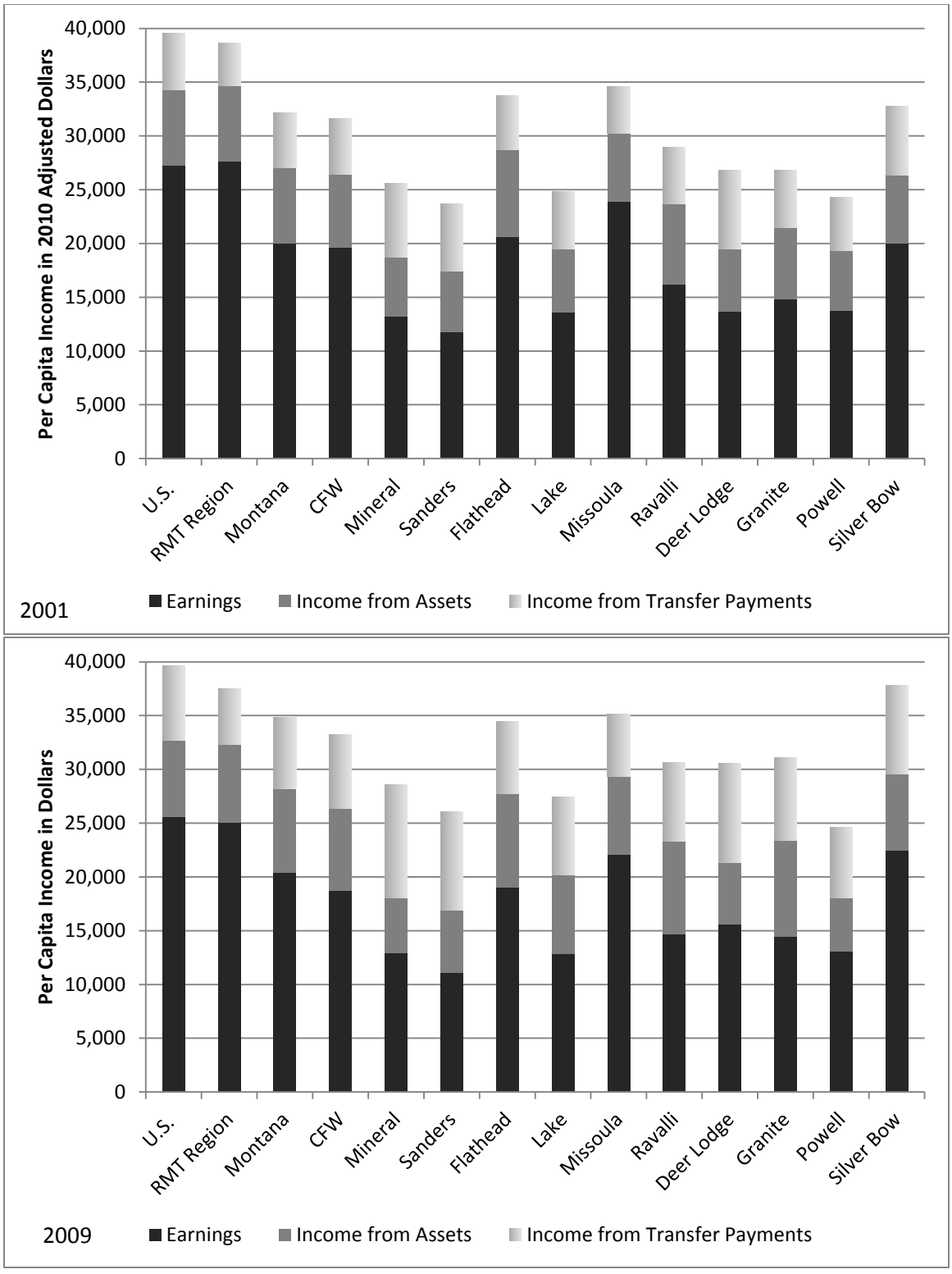


Figure 26: 2001 and 2009 income composition for earnings, assets, and transfer payments in 2010 adjusted dollars
Source**:** Bureau of Economic Analysis, 2001a, 2009a

Montana, the watershed itself, and most individual counties. However, Figure 27, which illustrates the composition of change in per capita income, suggests that much of the increase in per capita income over the past decade came from government transfer payments. Relative per capita income in the watershed from transfer payments rose by $1,722, whereas it rose by $840 for income from assets, and fell by $919 for income from wages and salaries. The decrease in non-labor income from assets combined with the decrease in the number of households receiving that income could be the fallout of the recession due to job loss and unemployment. However, as more individuals become eligible for social security, this likely also has an effect on increased income from transfer payments.

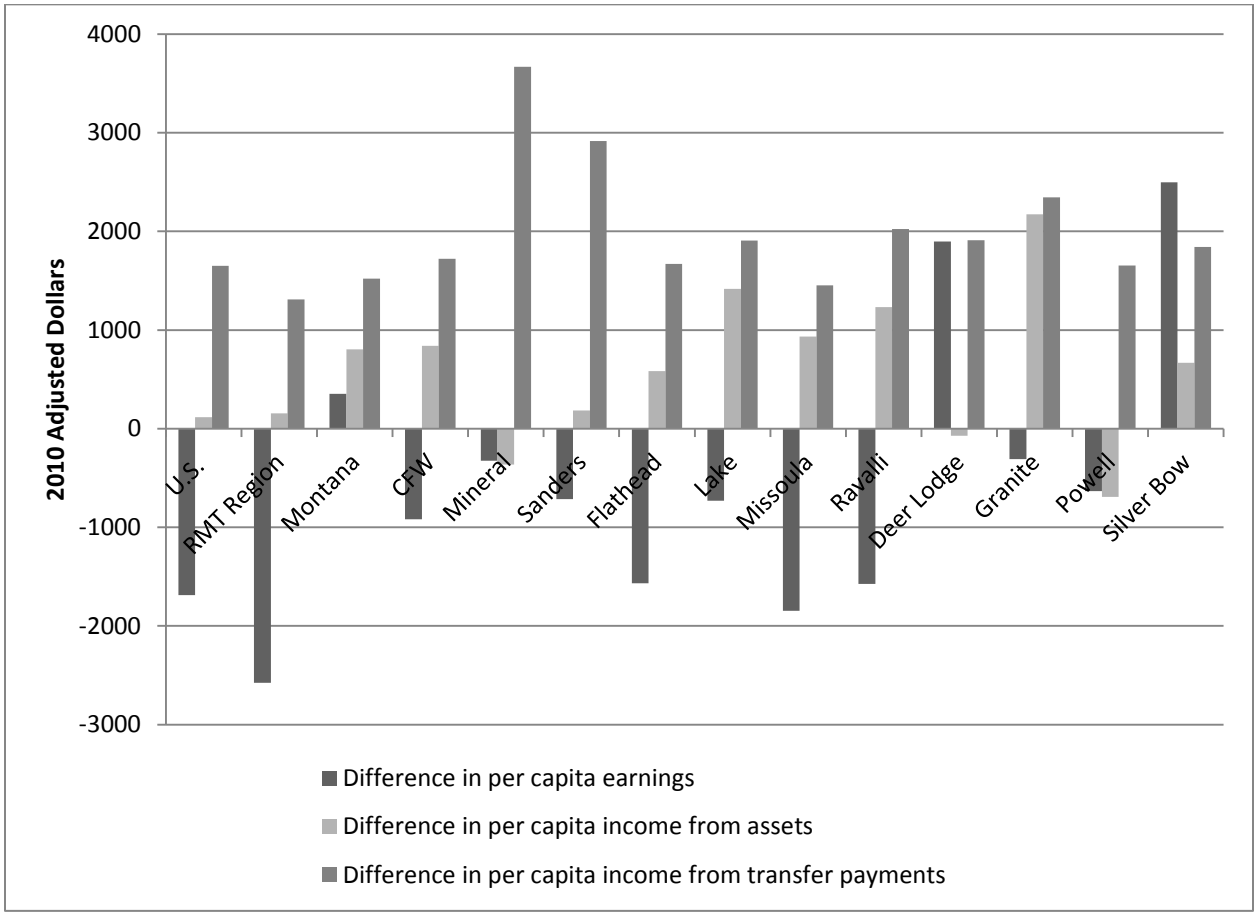


Figure 27: Overall difference in per capita earnings, income from assets, and transfer payments in 2010 dollars, 2001-2009

Source: Bureau of Economic Analysis, 2001a, 2009a

For the sake of comparison, Figure 28 presents the change in per capita income by source between 1990 and 2000. The difference is striking, especially regarding the relative change in earnings, which rose dramatically in the 1990's, and decreased significantly in the past decade.

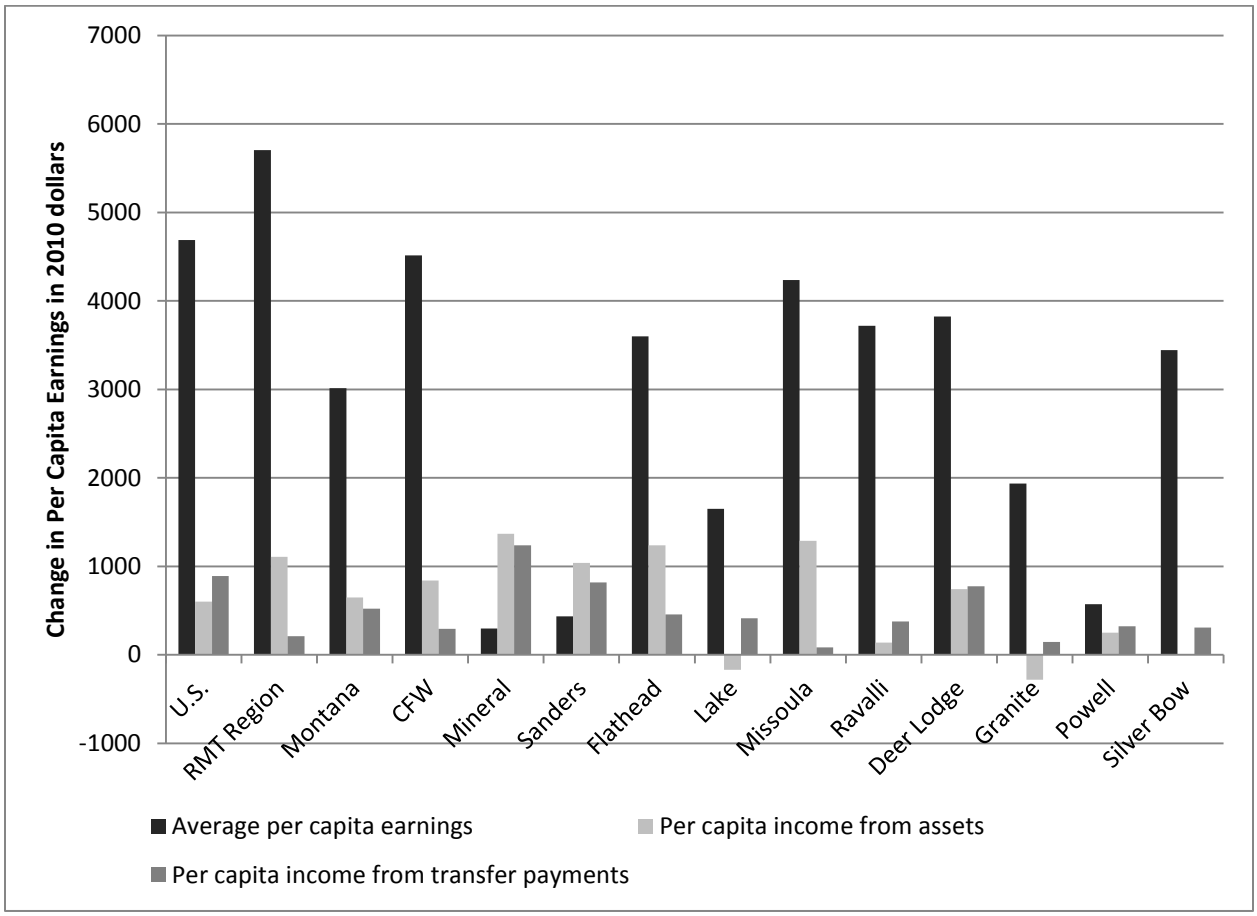


Figure 28: Overall difference in per capita earnings, income from assets, and transfer payments in 2010 Dollars, 1990-2000
Source**:** Bureau of Economic Analysis, 2009a

Implications

Income from non-labor sources, especially with regard to those typically considered as assets (such as from stocks, rent, home equity, etc.) is a key indicator of changes associated with the New West. Much of the change that is associated with New West dynamics is thought to be enabled by this income, which because of the level of footlooseness that it enables, allows

individuals to move to and settle in areas for amenity and lifestyle reasons, such as in the Rocky Mountain region, based on their attractions rather than economic opportunities. Studies have suggested that such individuals are even willing to earn less income or forego employment in order to do so (Von Reichert and Rudzitis, 1992). The findings in this section show that although the per capita income from assets in the watershed continued to rise in the past decade, that income grew less than government transfer payments, which is the reverse of the trend in the 1990's. On top of that, the proportion of individual households receiving income from assets decreased considerably. For some with assets, these assets may not have generated income due to the recession.

The findings also illustrate the stagnation and even decrease in per capita earnings from wages and salaries in the watershed, a trend that has been in effect since the 1970's, and also plays a role in the influence that non-labor income has in fomenting New West dynamics (Travis, 2007). Since income earned from labor is staying the same or dropping on a per capita basis, it means that income from non-labor sources plays an increasingly more central role in the economies of the region. It is especially notable that the difference in earnings in the last decade was so at odds with the upward trend seen in the 1990's. There are various reasons for why relative earnings would stagnate or decline, including increasing dependence on seasonal employment and part-time work, a rise in low-wage jobs (such as those related to tourism) and a decline in high-paying jobs (such as in manufacturing), and an increase in the age of the population which could bring about more semi-retired workers. It also could confirm a tenet of the New West that people moving into an area more for its attractions rather than for employment are willing to earn less to live there, or have non-labor income sources to compensate for lower wages or salary levels (Rudzitis, 1999).

Poverty and Childhood Poverty

Justification and Context

Poverty is an indicator of economic hardship, specifically with regard to how certain areas or segments of the population may be more economically or socially disadvantaged than others. A characteristic of the New West is a concentration of income in specific areas which offer the types of amenities that attract high rates of population growth. This uneven distribution can lead to a pattern of income inequality within a region experiencing New West dynamics, which has socio-economic implications for the residents in those communities. There are a variety of components of the population that are affected disproportionately by poverty. By identifying some of these more specific portions of the population, it is possible to identify the more vulnerable segments of a community.

Determining poverty status is based on a specific income threshold, determined by the Census Bureau, which varies by the number of people in a household. The more people there are in a household, the higher the income threshold. For a single individual in 2010, the poverty threshold was an annual income of $11,139. For a family of four it was $22, 134, compared to $21, 605 in 2000 using 2010 adjusted dollars. The threshold is slightly adjusted for individuals or families with individuals over 65 years of age, and depending on how many individuals within the household are children (United States Census Bureau, 2012).

The *State of the River Report* (Clark Fork Coalition, 2005) found that poverty rates had increased during the 1980's and then decreased again in the 1990's throughout the watershed. The areas of the watershed that saw the highest poverty rates in the 1990's were on the Flathead Reservation, and portions of the Bitterroot and Lower-Clark Fork sub-basins. During both of the decades between 1980 and 2000, children, or individuals under 18 years of age, saw relatively high poverty rates, which is also true for the nation.

Findings

The percentage of individuals for which poverty status was determined in the watershed in 2010 was higher than in 2000, rising from 14.7 percent in 2000 to 16.1 percent in 2010 (see table 17). In comparison, overall poverty rates rose for both the country as a whole and the Rocky Mountain region, but were still below the rate for the watershed in 2010. Montana stayed at about the same rate in 2010 as in 2000, which was 14.5 percent of individuals with designated poverty status.

	Overall Poverty Rate (%)	
Geography	2000	2010
United States	12.4	13.8
Rocky Mountain Region	12.1	13.6
Montana	14.6	14.5
Clark Fork Watershed	14.7	16.1
Mineral County	15.8	19.0
Sanders County	17.2	21.3
Flathead County	13.0	11.7
Lake County	18.7	21.6
Missoula County	14.8	17.3
Ravalli County	13.8	15.0
Deer Lodge County	15.8	21.2
Granite County	16.8	12.1
Powell County	12.6	17.3
Silver Bow County	14.9	17.8

Table 17. Poverty rates for individual counties and reference regions, 2000 and 2010
Source: United States Census Bureau, 2000j, 2006-2010c

Although the rise in overall poverty throughout the watershed was not great in terms of percentage points, it indicates a trend of increased poverty throughout the region. In examining the poverty rates for individual counties in the watershed, it is notable that the poverty rate for Flathead County actually decreased slightly over the past decade. Because Flathead is more populous than most other counties in the watershed, the trend for that one county has the effect of somewhat masking the pattern throughout the rest of the watershed, which is generally of

notable increases in the poverty rate. All of the other counties in the Highway 93 corridor saw increases in their poverty rates over the past decade, as did all other counties in the basin except for Granite County.

	Poverty Rate for Individuals Under 18 years of Age		Poverty Rate for Individuals Over 65 years of Age	
Geography	2000	2010	2000	2010
United States	16.6	19.2	34.7	34.2
Rocky Mountain Region	15.7	18.2	35.1	35.0
Montana	19.0	19.2	33.4	30.4
Clark Fork Watershed	18.7	20.9	31.5	28.7
Mineral County	22.6	30.6	32.0	26.2
Sanders County	17.3	17.8	34.4	36.2
Flathead County	24.4	5.4	35.6	8.0
Lake County	25.7	33.9	38.4	39.0
Missoula County	19.3	36.0	29.3	39.8
Ravalli County	15.2	14.9	24.0	17.9
Deer Lodge County	16.4	32.4	32.4	38.8
Granite County	20.9	23.5	38.6	35.7
Powell County	24.6	33.9	34.0	32.2
Silver Bow County	19.5	23.1	31.3	28.0

Table 18. Poverty rates for children and seniors, by county, 2000 and 2010
Source: United States Census Bureau, 2000j, 2006-2010c

Table 18 shows the poverty rates for children and seniors for the larger reference regions, the watershed, and its counties. In order to better understand where the most vulnerable segments of the population are, it is useful to examine poverty rates for the youngest and oldest age segments of a community. Poverty rates for children, or individuals under 18 years of age, and seniors, are important in gauging the well-being of a community's most vulnerable populations (Cook et al., 2009). Especially as the general population continues to age, it is important to identify the extent to which the young and the old are economically disadvantaged.

Unfortunately, the percentage of individuals in the watershed under 18 years of in poverty rose in the past decade, from 19 to 21 percent. Only one county in the watershed, Granite, saw a drop in the poverty rate for children, but with a small population and an even

smaller number of children, the margin of error is high, raising questions about the reliability of ACS data under those circumstances. For several other counties, especially those in the Upper and Lower Clark Fork sub-basins, the poverty rate for children reached high levels that are reminiscent of the 1980's (Clark Fork Coalition, 2005), with around a third of all children living in poverty in half of the counties in the watershed. In comparison, the poverty rate for seniors for the watershed stayed the same in 2010 as in 2000, with a rate of around one in ten seniors living in poverty. This was similar for most individual counties as well. Map 18 displays the distribution of overall poverty along with childhood and senior poverty throughout the watershed in 2010 at the census tract level.

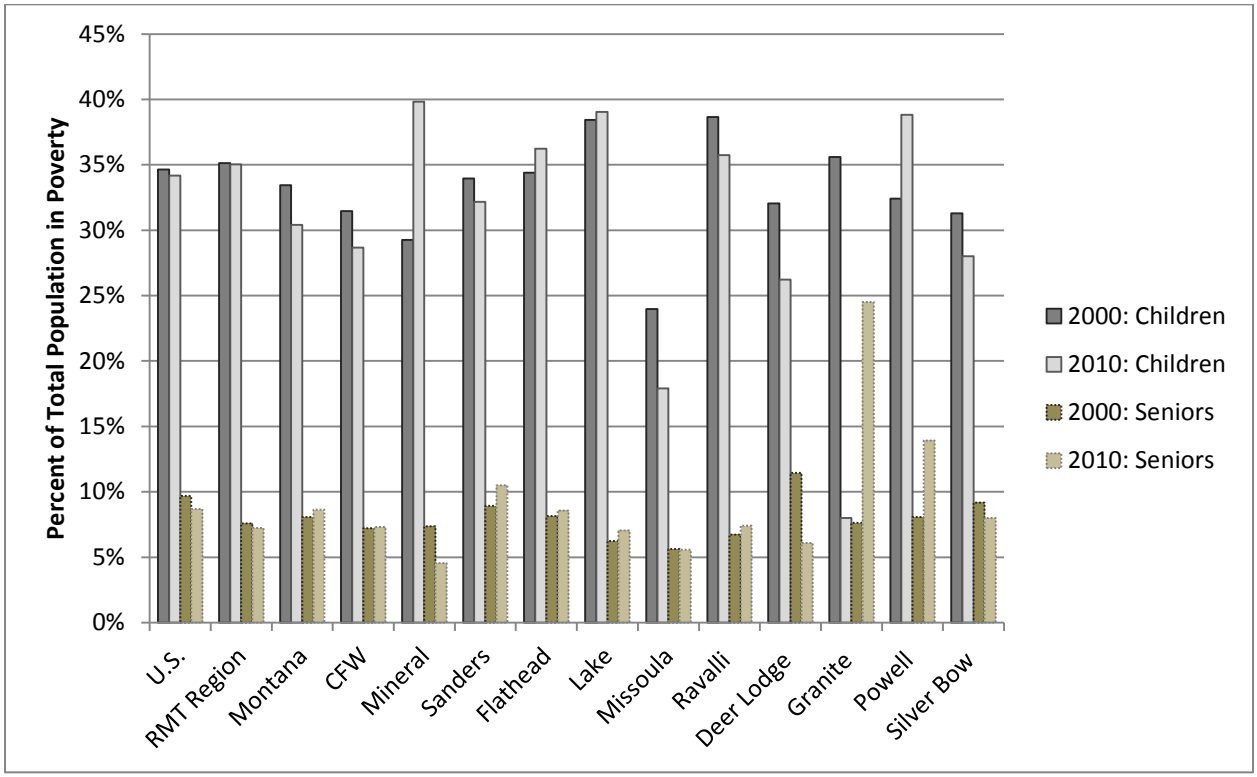
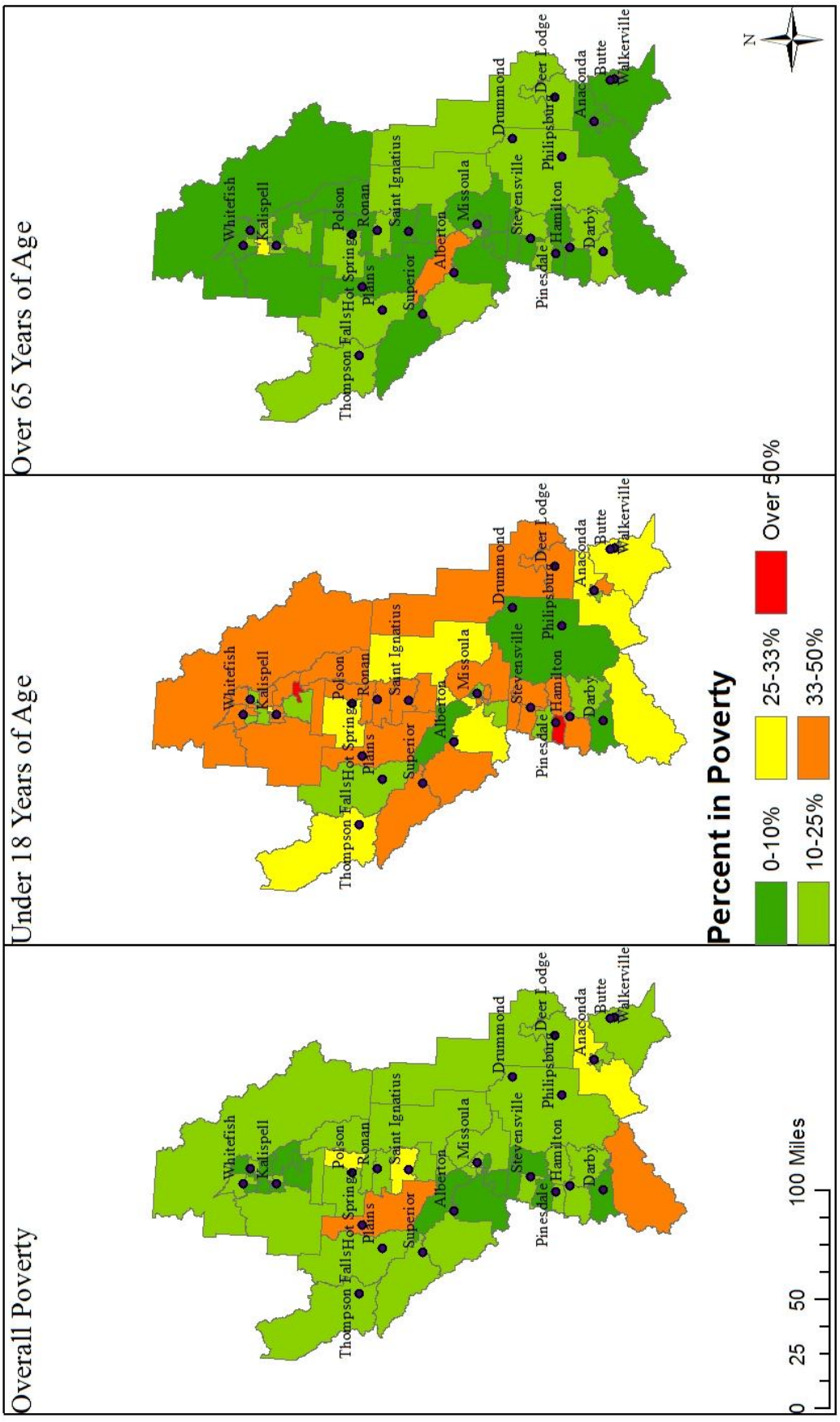


Figure 29: Proportion of children and seniors to total number of individuals with designated poverty status, 2000 and 2010
Source: United States Census Bureau, 2000j, 2006-2010c

Figure 29 presents the proportion of children and seniors out of the total population living in poverty for 2000 and 2010. Even though the poverty rate increased overall for individuals

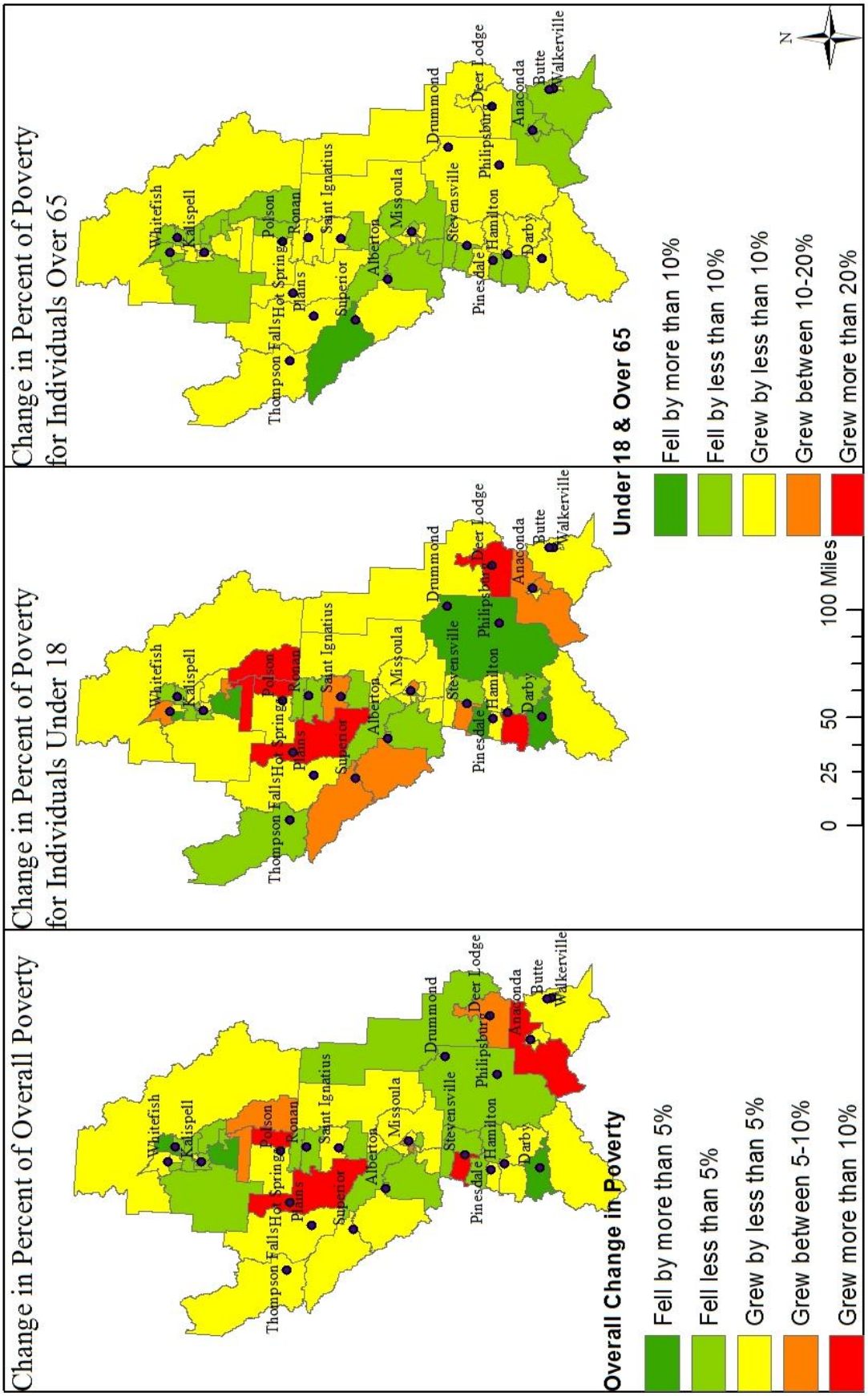


Map 18: Distribution of individuals living in poverty, 2010
Source: United States Census Bureau, 2000j, 2006-2010c, Census Tract Level

under 18 between 2000 and 2010, the proportion of children living in poverty to the overall population of individuals with designated poverty status actually decreased. In other words, in 2010 less of the people in the watershed who were living in poverty are children than the decade prior. In contrast, the proportion of seniors in poverty to overall poverty numbers stayed relatively the same. Apparently, the overall number of individuals with designated poverty status increased in the basin at a faster rate than for children specifically, which suggests that the segment of the population between 18 and 65 experience an increased vulnerability to poverty.

Map 19 displays the rates by which the percentage of individuals with designated poverty status rose and fell between 2000 and 2010. Though the general trend throughout the watershed over the past decade was an increase in overall poverty, an increase in childhood poverty, and a stagnation in poverty for seniors, this was not uniform in all areas. Although a majority of the watershed saw a rise in the proportion of people living in poverty, there are various pockets where this was not the case. The most prevalent of these is in and surrounding the more urban area of Flathead County, where poverty rates decreased. In contrast, the urban core of Missoula County saw areas with much greater rises in poverty, as did the urban area in the Lower Clark Fork sub-basin. However, in both cases within those urban centers areas with rising levels of poverty were directly adjacent to areas where poverty declined.

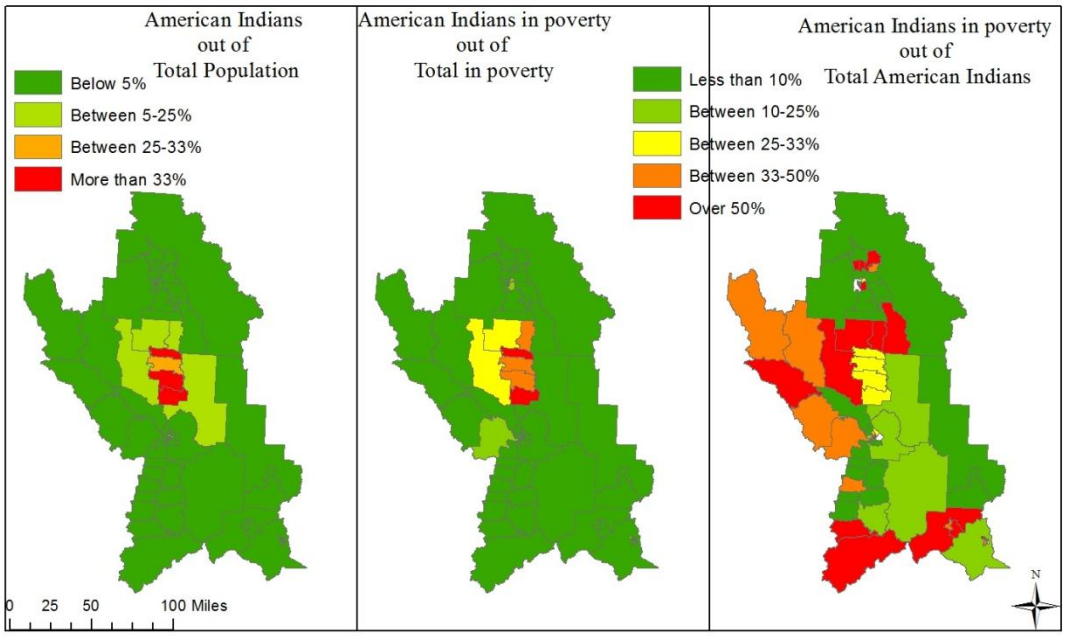
It should be noted that, although this measure is helpful in gaining a better sense of where poverty is in decline or on the rise, there are a number of variables which makes it difficult to determine with any certainty what the exact causes for those changes are. For example, areas with small population sizes will show a disproportionately high percentage that could seem more extreme than other more populated areas. Also, the process of reconciling census tract data for 2000 to fit in the maps for 2010, where several of the census tract boundaries were changed and



Map 19: Change by percent in distribution of poverty, 2000-2010
Source: United States Census Bureau, 2000j, 2006-2010c, Census Tract Level

new tracts have been added, involves a certain amount of estimation which leaves increased room for error in the data.

Besides age sectors, such as children and seniors, which are considered more vulnerable segments of the population, there are other population components that are especially at risk or disadvantaged when living under poverty. One such example that is noted here includes individuals whose race is defined as American Indian. Map 20 shows the distribution of poverty for American Indians in the watershed. The greatest percentage of American Indians in the watershed live within and around the Flathead reservation, which is also where the greatest percent of American Indians living in poverty occurs. However, perhaps more troublingly, the distribution of American Indians living in poverty as a percentage of the American Indian population shows that alarmingly high proportions of American Indians living in various communities throughout the watershed are overly affected by poverty.



Map 20: Distribution of poverty amongst American Indians, 2010
Source: United States Census Bureau, 2000j, 2006-2010c, Census Tract Level

Implications

There are several troubling conclusions that can be drawn from the findings for poverty related indicators presented above. On the most basic level, poverty increased in the basin over the past decade. Almost 10,000 more people were found to be living in poverty in 2010 than in 2000. The watershed grew in total population during that time by around 33,000 people, which means that the equivalent of around one in three people added to the total population of the watershed over the past decade are living in poverty.

According to the available data, this trend was seen in every county in the watershed except for Granite and Flathead. The fact that Flathead County saw an actual decrease in its overall poverty rate is an intriguing detail in the face of the general trend of rising poverty levels, especially with respect to New West dynamics. Flathead County resembles many of the traits which define a community as New West, and this along with its status as the second most populous county in the watershed raises interesting questions as to how income is distributed throughout the greater watershed region. It should be noted that despite a general decrease in overall poverty, Flathead County saw some of the highest rates of poverty for both children and seniors in some portions of that county.

Going beyond the rates of poverty for the overall population in the watershed, it is also troubling that the proportion of individuals who are children in the basin living in poverty has grown over the past decade. Half of the counties in the watershed showed around one in three children living in poverty in 2010. Looking more closely at the spatial distribution of childhood poverty, there is a distinctly rural pattern to where it occurs at its highest rates. Although it is not uniform, all three of the largest urban areas in the watershed show lower rates of childhood poverty closer to their urban centers than in the majority of the watershed, which has a more dispersed population. It is tempting to place this in Old West versus New West terms, where the

less populated, more Old West areas show higher poverty rates than the more populous New West communities. However, there is enough variation within and around the urban regions to make this assumption problematic.

Lastly, it is troubling that even though childhood poverty increased over the past decade, which in some parts of the watershed was dramatic, childhood poverty actually accounts for less of the overall number of people living in poverty than it did in 2000. This, combined with findings that show the rate of poverty did not generally rise or decline for seniors, implies a rise in poverty amongst individuals generally considered to be of working age, which could be related to a national phenomenon of growing numbers of working poor.

It is somewhat surprising that the rate of poverty for seniors did not rise over the past decade. Given the findings in the population characteristics section above that the greatest population growth by age cohort in most counties in the watershed were generally between 55-64 years of age, it is possible that the data from this year was just early enough to exclude a large number of soon-to-be seniors that simply did not make the cut. However, it also possible that a large amount of the population growth in the age cohorts that are nearing senior status is due to individuals who moved to the area, and so possibly had the types of retirement funds or pensions which would allow them to do so and which would keep them above the poverty threshold. Similarly, the category of "seniors" is of course not monolithic, and though individuals in the late stages of life (or 80 and 90 years of age) may indeed have less money, many individuals in the younger stages of senior status are not lacking for income.

DISCUSSION AND CONCLUSION

This project used a variety of demographic indicators related to population, housing, employment, and income characteristics, to measure changes in the Clark Fork watershed over the past decade from 2000 to 2010. Amongst these indicators, a variety of measures were taken, and the findings were shown in various descriptive ways to better illustrate the dynamics in the region. This final chapter of the thesis summarizes the above findings, discusses the limitations to this project, identifies areas where further research would be appropriate, and offers concluding remarks about the implications of this study for better understanding the changes in the region associated with the New West.

Summary of Findings

The findings from this project suggest that New West dynamics, which occurred in the Clark Fork watershed during the 1990's, continued in the past decade, though in a more limited way. Overall population in the watershed continued to grow, which is a key indicator of New West dynamics. However, that growth occurred more slowly than in the previous decade. Whereas the population of the entire watershed grew by 21 percent during the 1990's, it grew by only 12 percent between 2000 and 2010. Only one county in the watershed experienced a rate of population growth that was similar to the growth seen in the 1990's. Flathead County grew by 22 percent, and its population growth alone accounted for 41 percent of the total population growth in the watershed. At a more detailed scale, the findings show that there were several specific pockets of rapid population growth throughout the watershed, mainly along the Highway 93 corridor, while the majority of the region grew less rapidly or actually lost population. The difference in the nature of the population growth between the 1990's and the past decade is a fundamental difference between those two decades.

However, there are several indications that dynamics associated with the New West continued to occur during the past decade. An increasingly aging population is another important indicator of the New West, as individuals nearing retirement often have disposable income which enables them to choose to live in places based on their natural and scenic beauty rather than employment options. The findings here show that the population of the watershed aged significantly over the past decade. The average increase in median age by county in the watershed was 4.6 years, compared to an increase of less than 2 years nationally and for the Rocky Mountain region. Additionally, most counties in the watershed were already well above the national median age of 37 and regional median age of 35. In contrast, six out of ten counties in the watershed had median ages over 45 in 2010, and only Missoula County had a median age under 40 years of age.

Another indication of continued New West dynamics in the region showed up in changes in exurban versus urban/suburban housing densities. One of the most troubling aspects of the New West is the nature of land use development that it tends to bring about. Exurban development, which is defined as between 1.6 and 40 acres per housing unit (Theobald, 2005) expanded in the watershed at 15 times the rate for development at an urban/suburban density.

However, this finding should be contrasted with that of growth in incorporated versus unincorporated areas. In the counties with greater population centers, the trend of more rapid population growth in unincorporated areas observed in the 1990's was reversed in the past decade. This means that in this past decade far more people were moving to the more urban, service-accessible parts of the county. This was especially true for Flathead County, and corroborates findings from an earlier study focusing on growth of residential development in that county (Jarvis, 2008). At the same time, less populous counties, such as Mineral, Sanders, and

Powell Counties, saw population numbers decrease in incorporated areas, while population growth continued to occur in unincorporated areas at rates comparable to the 1990's. This could imply that these areas are experiencing an earlier stage in the transition towards the New West, whereas the communities that saw increased growth in incorporated areas may have reached a certain amount of saturation with regard to exurban development.

Vacancy rates for seasonal or recreational use, which are often used as an indicator for the New West, continued to increase between 2000 and 2010. This implies that the distribution of second homes and vacation homes was potentially unaffected by the recession, or that amenities in the region continue to create a pull for potential amenity migrants. Alternately, however, this could be an impact of the recession. It is difficult to untangle these findings without more in-depth and possibly qualitative methods. Another indication of impacts to the region associated with the New West is the increasing degree to which housing in the watershed became unaffordable to larger segments of the population over the past decade.

Besides the decline in the rate of population growth in the watershed, there were other indications that the changes associated with the New West did not stay consistent with the previous decade. Especially towards the end of the decade, housing construction slowed significantly throughout the watershed, and many of the areas that saw the most dramatic decreases in construction rates occurred in the same areas that saw the most population increase over the whole of the decade, implying that residential development had outpaced demand even in places that continued to see dramatic population growth. It is quite likely that the bust of the housing bubble of 2007 and the onset of the recession in 2008 played a role in this, either by limiting housing demand due to financial insecurity, or causing less in-migration to the region. Alternatively, it could be that the region had accumulated such a housing surplus from the

dramatic development during the 1990's that, regardless of the recession, housing stock had far exceeded demand anyway.

Perhaps the most important indicator of how impacts associated with the New West may be declining in the region is the change in the distribution and composition of non-labor income in the region. The findings show that non-labor income overall increased in the watershed, but that the proportion of non-labor income from assets was less in 2010 than in 2000. Not only did income from assets account for less of the total non-labor income that was earned in the watershed, the income from assets was also distributed far less widely throughout the population. The income from assets was less than in the previous decade might suggest that non-labor income played less of a role in the overall economy of the watershed than in the 1990's, but coupled with the decline in households receiving income from assets, it could suggest that income from assets was concentrated in a relatively smaller number of households.

The findings for this project raise the implication that economic inequality increased throughout the watershed between 2000 and 2010. Increased inequality is seen in a variety of the indicators used for this project. The finding for the change in households included in the "middle class," gauged as households earning between $25,000 and $75,000 in 2010 adjusted dollars, showed that a significant amount of the watershed saw over 50 percent of households which were considered to be middle class in 2000, drop to less than half of households belonging in the middle class in 2010. Accordingly, the percentage of households making less than $25,000 and more than $75,000 grew throughout the watershed, though this was not distributed evenly throughout the region. The areas where households making more than $75,000 grew to more than 25 percent of all households were mainly around the three urban centers in the watershed, whereas the percentage of households making less than $25,000 increased around the

periphery of the region. This implies both an increasing social and spatial polarization throughout the watershed over the past decade.

Other indicators of increasing inequality were housing affordability, unemployment rates, per capita and median household income, and poverty measures. The poverty measures in particular suggest a growing disparity of wealth and resources in the region. How income inequality fits in with changes in the region associated with the New West is not entirely clear from these findings, but there is certainly a suggestion that a pattern of increased income concentration within the region, both spatially and economically, occurred during the past decade.

Limitations and Further Research

A challenge posed by this type of study is ascertaining which indicators best capture the presence of New West dynamics in the Clark Fork watershed at the expense of others. At other times it seemed entirely possible to be drowned in data without determining an appropriate avenue towards furthering the findings of this project. Beyond these general issues, there are several specific considerations which would have helped clarify what demographic changes occurred in the watershed over the past decade.

It would be helpful to identify one more reference region to compare watershed-wide patterns to, such as a watershed with similar size and population composition and also located within the Rocky Mountain region. The national and state rates are interesting to compare to, but difficult to determine what relevance they have to the study area in many of the indicators used here. Similarly, the Rocky Mountain region is a satisfactory proxy for comparing trends associated with the New West but again has a much different population composition than the watershed. Identifying a multi-county watershed area in some part of the Rocky Mountain

region with a comparable distribution of access and proximity to natural amenities and urban centers, such as found in the Clark Fork watershed, would be a useful tool for gauging the extent of changes occurring in the study area with regard to the New West.

This project turned out to be more concerned with potential effects of the national recession than was initially expected, which was partly driven by the data available. The Census on Population and Housing, since it was collected in 2010, certainly captured some recessionary effects. Alternately, due to the Census Bureau's implementation of the ACS, the only set of data available for all counties in the watershed was 5-year data for 2006-2010, which also corresponds more or less with the recession. Interestingly, at the same time that the recession seems to mediate and slow New West dynamics in the Clark Fork Watershed of western Montana, the resource-reliant economies of eastern Montana are undergoing an energy boom. The resurgence of these Old West economies suggests a reversal of the trends of past decades.

This project drew on population and housing data without taking into account different land use planning regulations and other institutional controls around the watershed. There is quite a spectrum of approaches to land use development and management in the region, from the recent repeal of the growth policy in Ravalli County, to the relatively progressive planning department in Missoula, to the density map in Lake County, and so on. Examining these policies could lead to further comprehension of how New West dynamics play out in the region.

There are several indicators that are not included in this project which could also enhance an understanding of how New West dynamics have operated in the watershed. These include education and mobility characteristics. Education is a factor that is often associated with individuals moving to the New West, as well as the distribution of income levels, and employment composition. Mobility would have been quite appropriate here, especially with

regard to the type of spatial concentration that many of the other indicators used in this project have shown. The mobility data provided by the Census Bureau are often correlated with other indicators, such as household income, and educational attainment, which would offer increased insight into New West dynamics in the study area.

To sum up, identifying a sister watershed that could be used as another reference region, incorporating an expanded focus on opposing Old West dynamics in the region, using existing land use policies and regulations to further inform the findings, and including indicators on educational attainment and mobility characteristics would all have benefited this study.

Concluding Remarks

A number of scholars have developed and used the conceptualization of the New West to understand the demographic changes occurring over the past several decades in the greater Rocky Mountain region. The New West concept is employed in this thesis to understand socio-economic changes in the Clark Fork watershed during the past decade, the years between 2000 and 2010. Comparisons are also offered between the 2000s and the 1990s, with changes in the 1990s having been documented in the *State of the Clark Fork Report* (Clark Fork Coalition, 2005). Using data primarily from the U.S. Census Bureau, this project has shown that many of the key dynamics that are associated with the New West which were prevalent in the 1990's continued to occur during the past decade. However, they were significantly less pronounced and were also more spatially concentrated within the region.

This study produces a portrait of the watershed and finds that different regions within the watershed are at different stages of transitioning from Old to New West. This suggests that there may be a New West "lifecycle" that is playing out in the watershed, with the most populous regions approaching the mature phase, while other regions are in their infancy. This phenomenon

in turn raises important questions about what happens if there is an end to this lifecycle. Is there, as in some product lifecycles (Vernon, 1966), a sustained phase of saturation, or is there, as for other products or for the biological lifecycle, a phase of decline. As it happens, defining the study area by the watershed provided an effective means for distinguishing which areas of the watershed were in various stages of transitioning to the New West. Specifically, the Flathead sub-basin and the convergence of the Bitterroot and Lower Clark-Fork sub-basins showed indications of being at a more advanced stage in this transition than the peripheral areas in the watershed, such as the majority of the Lower Clark-Fork, Blackfoot, and Upper Clark-Fork sub-basins.

A common theme in the literature is that the New West in some ways transcends the classic "boom and bust" cycle that is so inherent to the history of the region and which typifies the Old West. This is explained as being due to the shift from a production to a consumption economy that is fundamental to the dynamics associated with the New West. However, another tenet of the New West is that income sources that are not directly related to local employment enable the population influx which spurs on development. In other words, the New West is based on prosperity. With the onset of a recession, as economic resources dwindle, the process of transitioning towards the New West may be slowed. The findings for this study certainly document such a slowdown. At the same time, the patterns of population and income concentration in the study area suggest that social and spatial inequality have accompanied the changes that are attributed to the New West (Taylor, 2004; Robbins et al., 2009). This social and spatial polarization is evidenced in the disparities found in the changes in income, housing affordability, and levels of poverty in the watershed during the past decade. While a New West

transition sparks growth in a region, this growth seems to not benefit all in comparable ways. This phenomenon warrants further inquiry.

APPENDIX

Employment sector abbreviations key:

Table 1A provides the full identification for the individual employment sectors that are referenced in the "Employment Characteristics" sub-section of the "Findings" section for this project. The abbreviations shown are used in Figures 6 through 24.

Abbreviation	Full Sector Identification
Farm	Farm Employment
Fo, Fi, Hu, Ag	Forestry, Fishing and Related Activities
Mining	Mining
Utilities	Utilities
Construction	Construction
Mfg.	Manufacturing
Wholesale	Wholesale Trade
Retail	Retail Trade
Transport.	Transportation and Warehousing
Information	Information
Fin. & Ins.	Finance and Insurance
Real Estate	Real Estate and Rental and Leasing
Prof. & Tech.	Professional and Technical Services
Mgmt.	Management of Companies and Enterprises
Admin.	Administrative and Waste Services
Education	Educational Services
Health Care	Health Care and Social Assistance
Arts & Rec.	Arts, Entertainment, and Recreation
Food Services	Accommodation and Food Services
Federal Govt.	Federal, Civilian
Military	Military
State Govt.	State Government
Local Govt.	Local Government

Table 1A: Employment sector abbreviations key
Source: Bureau of Economic Analysis, 2009b.

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